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U. S. DEPARTMENT OF
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MARKETING
LATE-CROP
POTATOES



THE POTATO is foremost in value among our vegetables. It is the chief money crop of large areas, is an important staple in many others, and is grown for home supply and local markets in almost every farming district.

This bulletin discusses some of the underlying facts and conditions that influence prices, the sources and character of the information the grower should use, and the differing marketing problems of the producers of the late or main crop. The location and relative importance of the heavy shipping districts are shown, with brief descriptions of their methods of marketing. Practices in important city potato markets are described.

Acknowledgment is made of assistance rendered by members of the Division of Fruits and Vegetables in the markets and producing areas in furnishing information used in this bulletin.

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MARKETING LATE-CROP POTATOES

By WELLS A. SHERMAN, *Principal Marketing Specialist*; GEORGE B. FISKE, and J. W. PARK, *Associate Marketing Specialists, Division of Fruits and Vegetables, Bureau of Agricultural Economics*

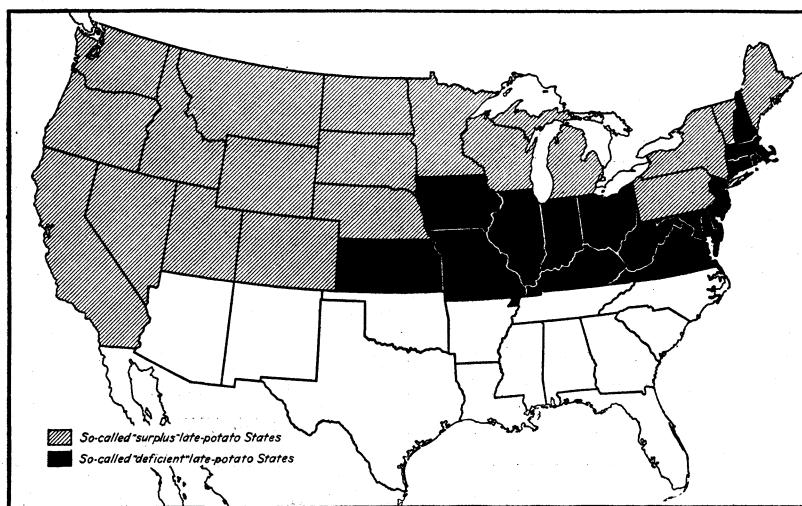
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LATE OR MAIN-CROP POTATO REGION

THE late or main crop of potatoes comprises about 80 to 85 per cent of the total production. Unlike the early crop, which is sold as fast as dug, the late crop is sold all winter and through the early summer of the following year, thus requiring different methods of marketing. Most of the late crop is harvested after September 1. October is the month of heaviest movement to market.

The principal area of late-crop production extends from Maine westward to Washington, and southward to New Jersey in the East, and to northern California in the West. Some States lying just south of this area produce both late-crop and early or intermediate-crop potatoes. New Jersey is usually classed as an early shipping State and California as a late-crop State; both of them, however, are heavy-shipping sections in each class in varying proportions, according to season. Some of the late-shipping States sell most of their market crop in small lots for local consumption. There are 19 so-called surplus producing late-potato States. (Table 1, and figs. 1 and 2.) These, arranged according to the average yearly number of carload shipments for the 5-year period 1922-1927, are Maine, Minnesota, Wisconsin, Michigan, New York, Idaho, Colorado, Washington, North Dakota, California, Pennsylvania, Nebraska, South Dakota, Oregon, Utah, Montana, Wyoming, Ne-



Nineteen so-called surplus late-potato States are the principal sources of shipments of late potatoes. Sixteen so-called deficient late-potato States use more of the late crop than they produce. Some of them, notably Virginia, Maryland, Delaware, New Jersey, Kentucky, and Kansas, are important producers and shippers of the early or mid-season crop.

vada, and Vermont. These States furnish all but a few thousand cars of the main-crop shipments and averaged about 184,000 carloads per season for the 5-year period. There are 16 so-called deficient-producing late-potato States (Table 1 and fig. 1), some of which are also important producers of early potatoes.

TABLE 1.—*Five-season average potato production in late-potato States, carload shipments, and percentage of crop shipped in carloads, seasons 1922-23 to 1926-27*

State	19 surplus-producing States				State	16 deficient-producing States			
	Production		Car-load shipments	Per cent shipped		Production		Car-load shipments	Per cent shipped
	Bushels	Cars ¹	Cars	Per cent		Bushels	Cars ¹	Cars	Per cent
Minnesota-----	37,178,000	61,963	28,489	46.0	Ohio-----	11,021,000	18,368	243	1.3
Maine-----	34,572,000	57,620	36,744	63.8	Iowa-----	7,510,000	12,517	397	3.2
New York-----	34,273,000	57,122	16,443	28.8	Illinois-----	6,974,000	11,623	163	1.4
Michigan-----	32,346,000	53,910	17,700	32.8	Missouri-----	6,768,000	11,280	985	8.7
Wisconsin-----	29,803,000	49,672	17,812	35.9	Indiana-----	5,327,000	8,878	136	1.5
Pennsylvania-----	25,076,000	41,793	4,488	10.7	West Virginia-----	4,815,000	8,025	81	1.0
Colorado-----	14,142,000	23,570	14,269	60.5	Massachusetts-----	2,673,000	4,455	6	.1
Idaho-----	13,720,000	22,867	15,873	69.4	Connecticut-----	2,605,000	4,342	0	.0
North Dakota-----	11,654,000	19,423	6,886	35.5	New Hampshire-----	1,830,000	3,050	89	2.9
Washington-----	8,907,000	14,845	7,328	49.3	Rhode Island-----	1,322,000	537	16	3.0
Nebraska-----	7,986,000	13,310	4,178	31.4	Virginia-----	2,14,484,000	24,140	18,130	75.1
California-----	7,778,000	12,963	6,660	51.4	New Jersey-----	2,9,411,000	15,685	8,286	52.8
South Dakota-----	5,866,000	9,777	1,998	20.4	Kentucky-----	2,4,344,000	7,240	899	12.4
Oregon-----	4,365,000	7,275	1,695	23.3	Kansas-----	2,4,310,000	7,183	3,518	49.0
Montana-----	3,876,000	6,460	996	15.4	Maryland-----	2,3,740,000	6,233	2,491	40.0
Vermont-----	3,295,000	5,492	182	3.3	Delaware-----	2,658,000	1,097	124	11.3
Utah-----	2,722,000	4,537	1,203	26.5	Total-----	86,792,000	144,653	35,564	24.6
Wyoming-----	1,670,000	2,783	827	29.7	Total States-----	35			
Nevada-----	729,000	1,215	679	55.9	States-----	366,750,000	611,250	220,010	36.0
Total-----	279,958,000	466,597	184,446	39.5					

¹ Carloads of 600 bushels.

² Mostly early potatoes.

WHAT IS DONE WITH THE CROP

Thirty-six per cent of the potatoes produced in the 35 late-potato States were shipped in carloads during the 5-year period ended with the 1926 season. (Table 1.) Of the 1926 crop, 35.5 per cent was shipped in carloads, and in addition 28.7 per cent was estimated to be available for local sale or marketing by motor truck, making a total of 64.2 per cent, or almost two-thirds of the late crop available for sale either in carloads or smaller lots. It was estimated that

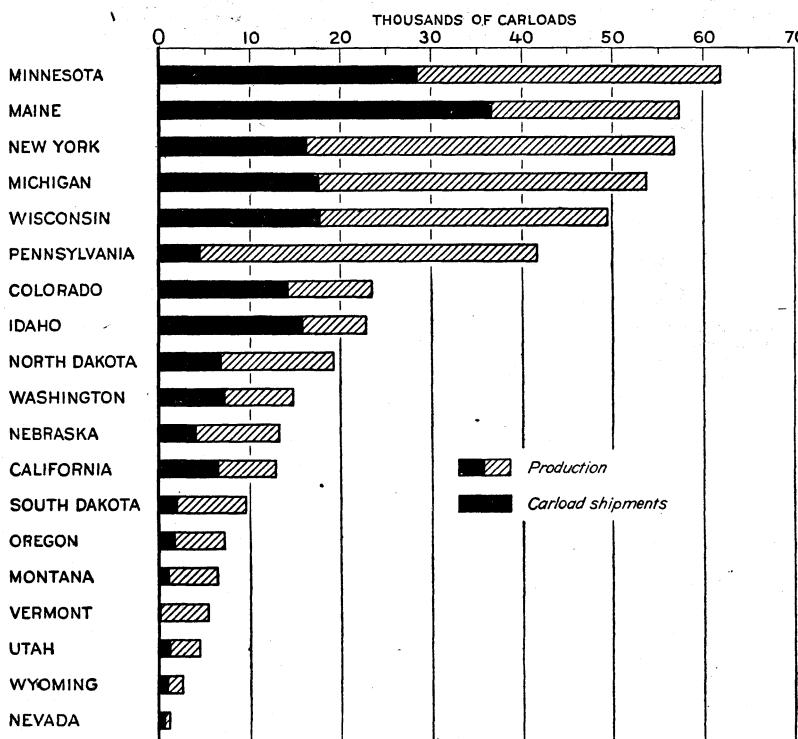


FIG. 2.—PRODUCTION AND CARLOAD SHIPMENTS OF POTATOES, 5-YEAR AVERAGE, 1922-23 TO 1926-27

Minnesota has led in the production of potatoes, whereas Maine has furnished the largest number of carload shipments. These 19 so-called surplus late-potato States have shipped in carloads approximately 40 per cent of their production during the period 1922 to 1927.

15.9 per cent was saved for food on the farms where grown and 9.2 per cent was saved for seed in the locality where grown. The remainder, 10.7 per cent, was estimated to be unfit for food or seed. (Fig. 3.)

The census report of 1925 shows only 37 per cent of the total farms in the United States as reporting the production of potatoes. There is an extensive market for potatoes, therefore, even in the rural districts. In addition to the potatoes shipped in carloads, many millions of bushels are annually marketed by motor truck or wagon.

Although in recent years over 60 per cent of the late crop has been estimated to be available for sale, in some years a considerable quantity of good potatoes may remain on the farms for lack of a market. The marketing problem deals with the selling of somewhat less than two-thirds of the potatoes actually grown.

Producing areas which do not have a large number of important markets close at hand ship a larger percentage of their crop in carloads than do other areas that are located near consuming centers. For example, Idaho ships 69 per cent of its crop in carloads, whereas Pennsylvania ships only 11 per cent. (Table 1.) In such States as Ohio, Indiana, Illinois, and Iowa most of the potatoes which are grown for sale are marketed locally. The figures presented in Table 1 have a vital bearing on successful marketing, and a careful study of this table will help a grower to understand his marketing problem.

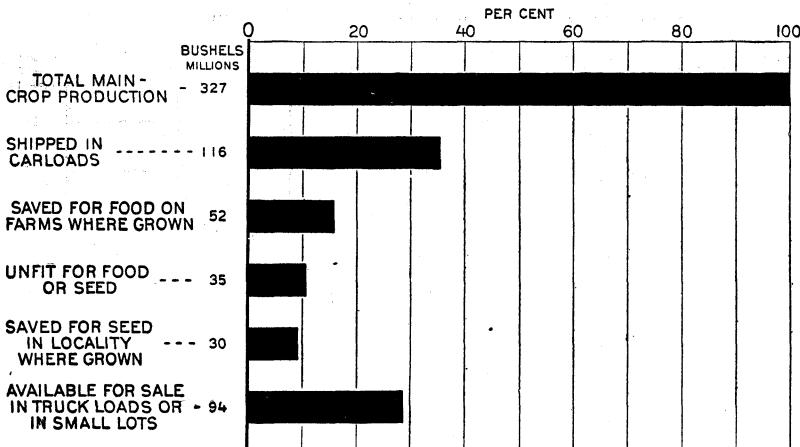


FIG. 3.—UTILIZATION OF LATE-POTATO CROP, 1926

About 35 per cent of the 1926 late-potato crop was shipped in carloads. Almost 29 per cent was available for sale in truck loads or small lots. These two groups constitute almost two-thirds of the crop.

CARLOAD THE COMMERCIAL UNIT

Potato growers measure their crops by the acre, the bushel, the barrel, or the 100 pounds. The commercial movement, however, is measured in carloads. A carload does not always mean the same number of bushels or barrels. Although many carloads of the late crop have run as high as 700 to 800 bushels, for the crop as a whole in average seasons, and for the late crop separately, 600 bushels, or 18 tons, is reckoned a carload.

THE SELLING IDEA

Marketing is comparatively simple when conditions favor the producer. Potatoes sell easily at fair prices when the supply is not excessive and the demand is active. Buyers are then looking for shipments, and almost any kind of potatoes, regardless of grade, finds a ready market. But for the late-potato crop such conditions prevail

during less than half the time. In seasons of heavy production and little speculative demand, when local buyers are hard to suit, only by skillful marketing can the producer hope to get satisfactory returns.

In any season a thorough knowledge of conditions that attend the marketing of potatoes offers a distinct advantage in buying or selling. The relatively well-informed handler of potatoes knows a little better than his neighbors and competitors how and where to sell or buy. He may not be right on every occasion, but in the long run his trained judgment will give him the advantage. The practical question for the grower is how to interpret potato-marketing history and apply its lessons to the selling of his crop from year to year. The following are some of the questions which the grower should consider in relation to the marketing of his crop:

Are there any facts or conditions upon which his marketing policy may be safely based?

Is there any market information he can use to aid him?

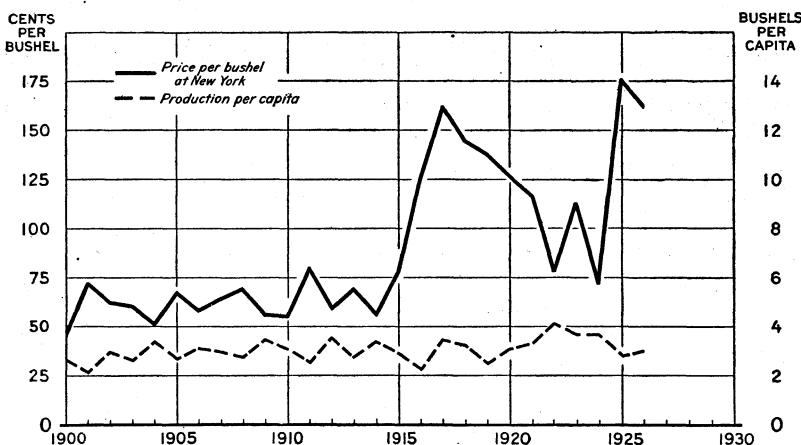


FIG. 4.—PER CAPITA PRODUCTION AND OCTOBER PRICE OF POTATOES, 1900-1926

Potato prices move up and down from season to season according to the size of the crop.

Can he hold his main crop for the late market with profit, or are the risks too great?

Shall he accept the offer of his local buyer or seek a distant outlet?

How can he tell what growers in distant but competing territory are going to do?

Is it possible to foresee an unprofitable season in time to save storage and waste by selling early?

FORECASTING THE MARKET SEASON

The potato price level has varied from season to season depending on the size of the crop. (Fig. 4.) Signs of the probable trend of the coming potato market season appear as early as March, when the reports of the United States Department of Agriculture are issued regarding the intentions of growers to plant a larger or smaller acreage than that of the preceding year. The Government report on acreage planted, issued in July, indicates the size of the

crop that may be expected under average conditions. In average seasons the crop varies according to the acreage planted, but sometimes a large yield offsets a reduced acreage, or crop injury causes shortage even from a large acreage. Accordingly, condition reports and crop forecasts must be followed month by month. Reports of poor crops in other sections should encourage the grower to take special care of his own fields in order to be in a position to obtain full advantage from the probable shortage. By August the situation becomes more clear; in September it is still more definite. The Government condition reports and forecasts appear soon after the first of each month and show the probable production.

The September forecast has been a fairly good guide as to whether the crop would be large or small. For the period 1920-1926 the variation of the September forecast from the final estimate issued in December has averaged slightly more than 4 per cent. In October still more reliable figures are available.

As a general rule, whenever total potato production for the United States has approached or exceeded 3.8 bushels per capita, the price has tended downward during the season but the price trend has usually been upward whenever the yield fell below 3.2 bushels per capita.

During the last 27 years the grower was usually justified in holding only when the indicated crop was far below the average, or was not much more than 3 bushels per capita. In other years, the chance of profit to the grower was too uncertain to balance the added risk, cost, and shrinkage. The grower who acted according to early forecasts, selling at once when heavy yields were indicated, or selling at convenience in case of doubt, and holding only in very scarce seasons, apparently had a chance of being right three out of four times, judging from outcome of seasons since 1900. (Fig. 5.)

The production in the late-potato States is the most important factor in determining the season's price level. The situation may be affected slightly by the indicated competition with imported potatoes and with sweet potatoes and possibly other vegetables. The imports are not of great importance, however, as in recent years they have usually totaled less than 1 per cent of the United States crop.

The exports of potatoes from the United States likewise are relatively small. There is at times competition between the old and new crops which are on the markets together in April, May, and June.

Although it has been generally true that in years of small crops the price has tended to rise during the latter part of the season and in years of large crops the price has tended to fall, yet the grower should not rely wholly on this theory. As supply and marketing information become more accurate, the widespread effects of shortages and surpluses on the winter and spring prices are likely to be more nearly discounted in advance. If well-informed dealers believe the price is likely to rise later in the season, speculative buying in the fall will increase, with the result that prices will tend to rise during the fall months.

In bargaining for the sale of his potatoes the grower should form some idea as to what is a fair price for his crop. The relation of supply to price in recent years should be studied. The average

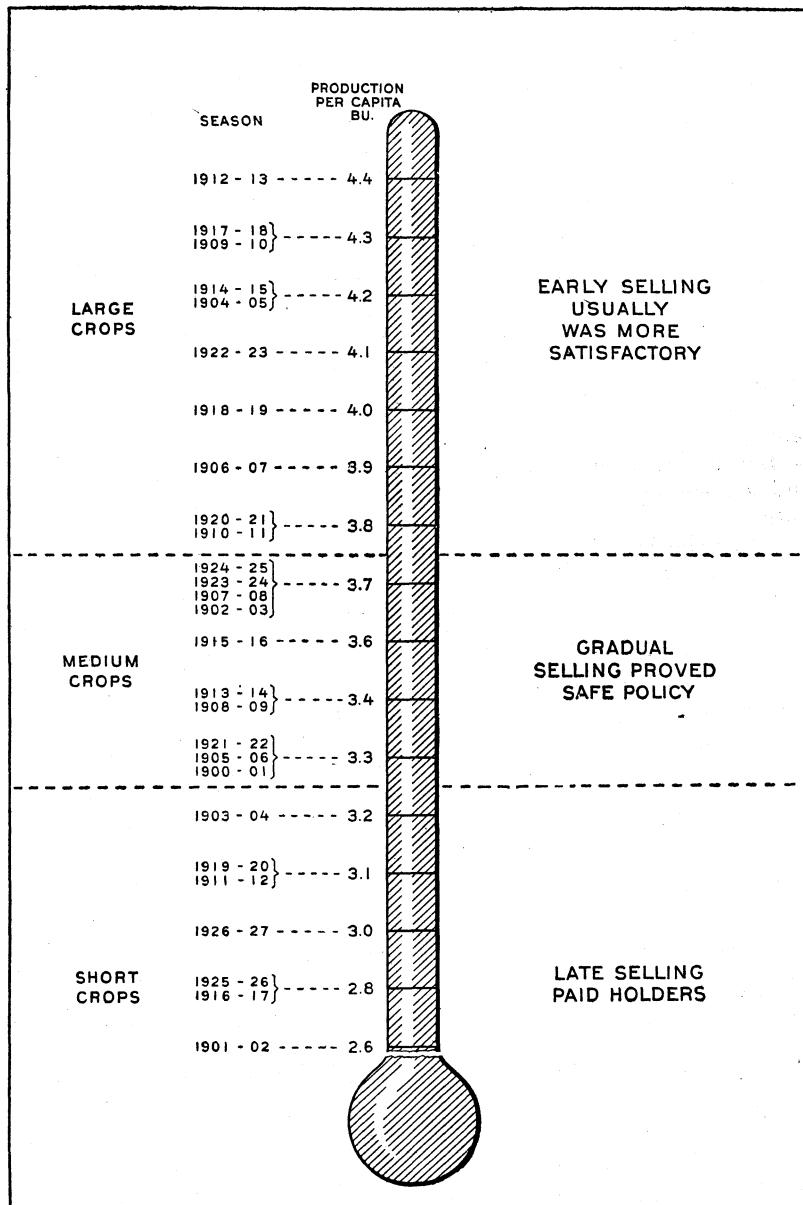


FIG. 5.—POTATO BAROMETER

As a general rule, in short-crop years prices have advanced during the season and in years of large crops they have usually declined. However, growers should not rely wholly on this rule but should study the situation carefully before deciding when to sell.

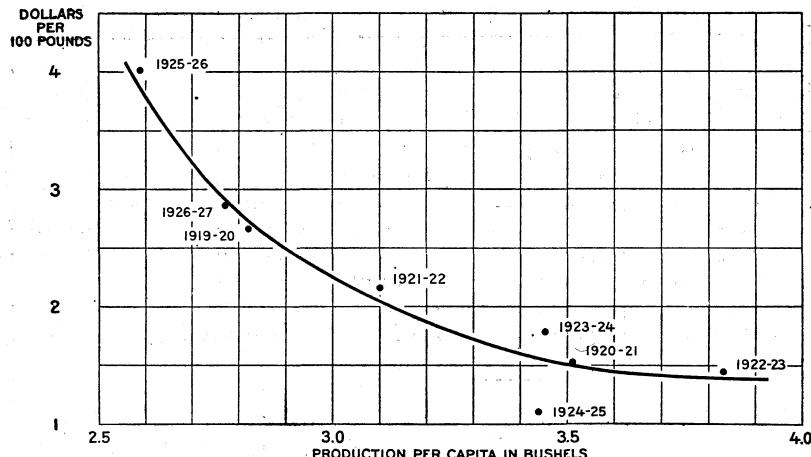


FIG. 6.—UNITED STATES PER CAPITA POTATO PRODUCTION IN 35 LATE STATES AND NEW YORK CITY AVERAGE JOBBING PRICES, U. S. NO. 1 GRADE

The late-crop seasonal price (October to May average) in New York City has varied fairly closely in accordance with production in the late-crop States. (Table 2.) The price of the 1923 crop was somewhat higher and that of the 1924 crop somewhat lower than might have been expected from the production. (Prices have been adjusted to the 1926-27 season level of agricultural products.)

seasonal prices in Chicago and New York City and the per capita production of late potatoes are shown in Figures 6 and 7 for each season since 1919. When the production in 35 late-producing States fell much below 3.4 bushels per capita for the United States population, the average seasonal price increased greatly over the average of years when the production was more than 3.4 bushels per capita.

TABLE 2.—Potato production in 35 late-potato States and prices at Chicago and New York, October to May average, 1919-20 to 1926-27

Season	Production	Production per capita United States population	Chicago price per 100 pounds United States No. 1 grade, October to May average ¹	Chicago price adjusted to 1926-27 level ²	New York price per 100 pounds United States No. 1 grade, October to May average ¹	New York price adjusted to 1926-27 level ²
1919-20	298,539,000	2.82	4.98	2.85	4.66	2.67
1920-21	376,866,000	3.51	1.39	1.32	1.60	1.52
1921-22	337,980,000	3.10	1.84	1.99	2.00	2.17
1922-23	423,885,000	3.83	1.14	1.10	1.51	1.45
1923-24	389,039,000	3.45	1.50	1.45	1.86	1.79
1924-25	393,767,000	3.44	1.28	1.12	1.32	1.16
1925-26	300,635,000	2.59	3.70	3.38	4.39	4.01
1926-27	326,423,000	2.77	2.64	2.64	2.87	2.87

¹ Prices are straight averages of prices shown in market news reports.

² Prices have been adjusted to the 1926-27 season level by using the Bureau of Agricultural Economics index numbers for wholesale prices of farm products.

Figures 6 and 7 show that the variations from the theoretical price in some years has been considerable, and it is not to be expected that the average seasonal price can be forecast exactly. Such factors as quality of the crop, demand as influenced by business conditions, geographical location of large surpluses, etc., all have some effect on the price. However, the grower who studies these relationships of production and price for past years will be in a better position to judge the market and to decide when to sell. The extra costs of storing and the loss from shrinkage make it necessary for the grower to receive a considerable increase in price when the stored potatoes are sold if the operation is to be profitable. The relation of the New York or Chicago price to the price at the grower's shipping point will depend on such factors as transportation charges, dealer's mar-

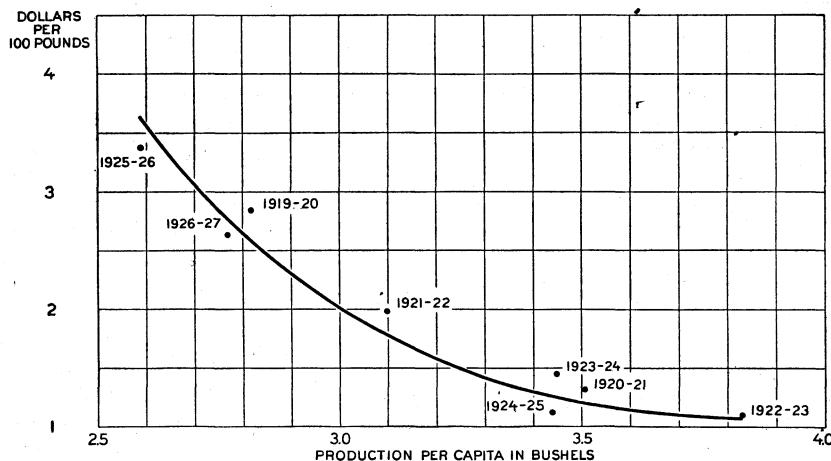


FIG. 7.—UNITED STATES PER CAPITA POTATO PRODUCTION IN 35 LATE STATES AND CHICAGO AVERAGE CARLOAD PRICES, U. S. NO. 1 GRADE

The Chicago late-crop seasonal price as well as the New York price (fig. 6) has varied in accordance with the late-crop production. (Table 2.) (Prices have been adjusted to the 1926-27 season level of agricultural products.)

gin of profit, and size of the crop in different sections, but the grower who has carefully observed market conditions and prices for a period of years will be able to estimate fairly well the probable relation between the Chicago or New York price and the price at his shipping point.

The Chicago and New York seasonal prices shown in Table 2 and illustrated in Figures 6 and 7 have been adjusted to the 1926-27 season price level by using the Bureau of Agricultural Economics index numbers for wholesale prices of farm products. The purpose of this adjustment is to correct for the abnormal price levels which existed in some post-war years and to place these prices on the basis of 1926-27 price levels. For practical purposes the grower, in making use of Figures 6 and 7 to help determine the probable seasonal price from the known production, may ignore this price adjustment unless economic conditions should change materially.

Differences in prices in sections of the country are less than they were a decade or more ago, when potato prices were far apart even in States located in the same region, like Michigan and Wisconsin. In recent years 25 cents per 100 pounds would often cover fairly well the day's differences in prices of potatoes between the principal sections East and West.

The grower who is not located in a strictly commercial section and who usually finds a local market for his potatoes will not be affected as much by the size of the total late crop as the grower in a strictly commercial area who has to dispose of his crop in distant markets.

SOURCES OF CROP AND MARKET NEWS

The daily market news reports of the Bureau of Agricultural Economics are of value in many ways. The buyer as well as the grower who ships his own stock should note the daily reports of potato shipments so as to forecast the supplies on the market. The shipping-point news supplies information on prices paid in competing sections. Prices in the city markets should be followed to determine whether shipments should be sent beyond the near-by markets for best returns, and for the purpose of checking up returns reported on sales already made.

The daily reports are summarized in a series of weekly reports prepared for the newspapers and farm periodicals. For many farmers, the earliest reports of potato-crop production, condition, movement, and market prices are from these summaries, published in the local paper.

Daily price reports on potatoes are sent out by the Bureau of Agricultural Economics in cooperation with a large number of radio broadcasting stations throughout the country. Some large producers and dealers or associations receive reports by telephone or telegraph direct from field stations.

A monthly publication of the Department of Agriculture at Washington, called *Crops and Markets*, contains important potato crop and market information, including the crop reports and estimates. This paper may be had at 60 cents a year of the Superintendent of Documents, Government Printing Office, Washington, D. C.

About February of each year the Agricultural Outlook report is issued by the Bureau of Agricultural Economics. It analyzes the situation and outlook for the potato crop of the following season. A little later a report on the acreage which farmers intend to plant is issued. Early in the fall a special report is released, in which the potato-marketing situation is analyzed.

These and other daily and weekly publications, including the potato-crop forecasts, estimates, weekly market review, and summary of car-lot shipments, are sent free on request. Similar reports covering individual States in some detail are published by the agricultural departments in various States.

Technical Bulletin No. 7,¹ *Origin and Distribution of the Commercial Potato Crop*, is available from the United States Department of Agriculture, Washington, D. C., and contains much infor-

¹ STROWBRIDGE, J. W. *ORIGIN AND DISTRIBUTION OF THE COMMERCIAL POTATO CROP*. U. S. Dept. Agr. Tech. Bul. 7, 60 pp., illus. 1927.

mation of value to growers and shippers in regard to competition among producing areas, market outlets, etc.

The field stations from which market-news reports have usually been issued in recent years in the late-potato sections are as follows: Waupaca, Wis., Grand Rapids, Mich., Idaho Falls, Idaho, Rochester, N. Y., and Presque Isle, Me. These stations open from the middle of September to the 1st of October and usually close in April. In addition, a few other potato-news field stations sometimes operate for a month or two in the fall. Daily reports are sent out from the field stations during the season of operation and may be obtained on application to the Washington office or by applying about September 1 directly to the nearest field station. Summaries of the marketing season are prepared by the bureau's representatives in charge of the various field stations and are distributed free upon request. These summaries contain a statistical review of prices and shipments and are convenient for reference purposes. The market stations of the United States Department of Agriculture at New York, Philadelphia, Boston, Baltimore, Washington, Pittsburgh, Cincinnati, Chicago, St. Louis, Kansas City, Fort Worth, Minneapolis, Denver, Salt Lake, San Francisco, Portland, and Los Angeles send out daily potato-market reports throughout the season. They include the number of car-lot shipments from each State, the number of cars arriving at the principal cities, the prevailing range of prices, and the market and weather conditions.

The financial and business standing of any dealer may be investigated through the commercial credit books, through the local banks, or through special references, which the dealer should be glad to supply on request.

USING THE PRICE RECORDS

The farmer should keep together the various reports received, including tables, estimates, summaries, and car-lot statements, by crops, weeks, months, and shipping season. These will be useful for reference, but the main-crop outline should be kept in mind, including production, quality, general market movement, and price range in recent seasons. With these as a background he will be able to judge from the prices in leading markets and at shipping points which way the general market is going.

Prices are determined mainly at points where there is greatest sustained volume of sales. The larger markets are first to show the changes in price trend because of their constant activity and frequent sales of large lots. Their huge demands on available stock make them both indicators and regulators of prices.

The leading varieties and grades sold in the big markets indicate the course of potato prices because they are always in steady demand and are salable in large quantities.

An occasional glance during the spring months at quotations of No. 1, Florida Spaulding No. 4 in New York, or of No. 1 Texas Triumph in Chicago, or, later, of the Virginia or Kaw Valley Irish Cobbler in New York, Pittsburgh, Chicago, and Kansas City will give a sufficient idea of the early market to a person interested chiefly in its relation to the main crop, for as the early crop is less than

one-fifth of the total production and is not suitable for storage, it seems to have comparatively little effect on the price of the following late crop. It does, however, have some effect on the price of late-crop potatoes which are on the markets during the spring months.

The intermediate crop, which is on the markets during August and early September, from New Jersey, Long Island, Minnesota, Nebraska, Colorado, etc., competes to a certain degree with the early sales of the main crop and is worth watching, as foreshadowing to some extent the early price of the main crop. Prominent features of the mid-season markets are the New Jersey and Long Island Irish Cobbler in New York and the Minnesota Early Ohio in Chicago and Minneapolis.

From October onward the late crop holds the market, and the prominent lines are the U. S. No. 1 grade of Maine and Long Island Green Mountain and Western New York round white in New York City, and Wisconsin and Minnesota round white, Colorado Brown Beauty, and Idaho Russet Burbank in Chicago and other western markets, Michigan Late Petoskey (Rural Russet) is important in certain cities in the middle West, such as Cleveland, Detroit, and Pittsburgh. In Philadelphia and Baltimore round white from Pennsylvania and other eastern States is usually quoted.

Expertness in market judgment may be gained only by practice day after day and season after season. One soon learns to look for certain price changes under given conditions. Thus, a long-continued rise is often followed by dullness and hesitation at the top, then by a sharp decline, and finally by a partial recovery. Declining prices usually occur as shipments reach height, with a recovery and advance after the height of the movement is over. When active buying demand is reported in leading markets after long decline and dullness, a sharp rise often follows. A city which quotes high prices may soon quote lowest on the list because of the large supplies likely to be diverted to that market, but cities which have no large neighboring supply may quote higher prices than other markets for a considerable time when car-lot arrivals are light.

Extreme weather, hot, cold, or stormy, may interfere with quantity or quality of supplies and cause active but short-lived fluctuations in price, and so with scores of price movements in which the reader of market reports soon becomes well versed in connection with the markets in which he is interested.

The practiced reader glances over the daily report, noting which markets show changes in price and the reason why as indicated by what the report says about the supply and demand, the number of cars on track, and the number reported shipped from States supplying these markets. He attaches most importance to changes in leading markets like Chicago and New York. He glances over the shipping-point news at Waupaca, Idaho Falls, Rochester, or Presque Isle to see how country prices and conditions compare with changes in the corresponding city markets.

He goes over the underlying conditions with the aid of the weekly review of car-lot shipments, other weekly reviews, and special articles, if the main facts are not already in mind. He notes the size

of the crop and the quantity shipped from each State for the season to date. He observes carefully the attitude of growers, buyers, and shippers, namely whether they are anxious to trade or are holding back. He takes into account the quantities reported as held by growers and local dealers on January 1 or other dates, the weather conditions, whether favorable for rapid and safe transportation or the opposite. If the new southern crop is about ready or is beginning to compete, he takes that into account—its size, condition, quality, and location—and last, having the situation in mind in all its essential aspects, he forms his own judgment as to the probable course of the market.

In general, the man who keeps the main facts in mind and who learns to read the meaning of prices almost at a glance has a definite advantage in buying or selling. The larger the number who are well informed on prices and conditions, the more uniform will prices tend to become in all sections and throughout the season, because all buying, selling, or holding based on knowledge of actual conditions tends to equalize prices and thus in the long run to benefit all. When many thousands of sellers and buyers are equally well informed, there is little opportunity for a few to gain undue advantage.

The general behavior of the potato market is much like that for other staple fruits and vegetables which have a shipping season continuing throughout the winter. There is usually a time of low prices during the main harvesting season, followed by more or less recovery, lasting perhaps until near the end of the calendar year. Then comes an irregular course throughout the winter, depending partly on conditions of weather and transportation, and finally a new movement in the spring either up or down, according to the supply on hand when hauling and shipping conditions are favorable and the active late movement begins. (Fig. 8 and Table 3.)

TABLE 3.—*Average price of U. S. No. 1 grade potatoes per 100 pounds in New York City and Chicago by months, 1922–1927*

Season beginning September	New York City ¹					Chicago ²				
	1922	1923	1924	1925	1926	1922	1923	1924	1925	1926
September -----	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
September -----	0.95	1.49	1.37	2.43	2.57	1.17	1.70	1.32	2.09	2.45
October -----	.96	1.85	1.33	3.23	2.89	1.00	1.14	.97	2.67	2.49
November -----	1.22	1.67	1.22	4.09	2.99	1.05	1.24	1.31	3.47	2.65
December -----	1.36	1.59	1.26	4.20	2.92	.96	1.27	1.36	3.64	2.47
January -----	1.39	1.96	1.46	4.61	2.80	1.02	1.58	1.47	4.06	2.55
February -----	1.44	2.01	1.56	4.57	2.48	1.07	1.71	1.63	3.81	2.37
March -----	1.87	1.96	1.21	4.67	2.45	1.35	1.75	1.44	4.04	2.42
April -----	2.09	2.12	1.20	5.64	2.76	1.53	1.79	.84	4.62	2.68
May -----	1.76	1.73	1.36	4.10	3.64	1.13	1.50	1.18	3.23	3.51

¹ Jobbing sales.

² Carload sales.

Division of Statistical and Historical Research, Bureau of Agricultural Economics.

STOCKS HELD BY GROWERS AND LOCAL DEALERS

An estimate of the quantity of merchantable potato stocks held by growers and local dealers the first of the year is issued in January by the United States Department of Agriculture. The relation

of these holdings to the late winter and spring prices is important. (Table 4 and fig. 9.) When the quantity of merchantable stocks

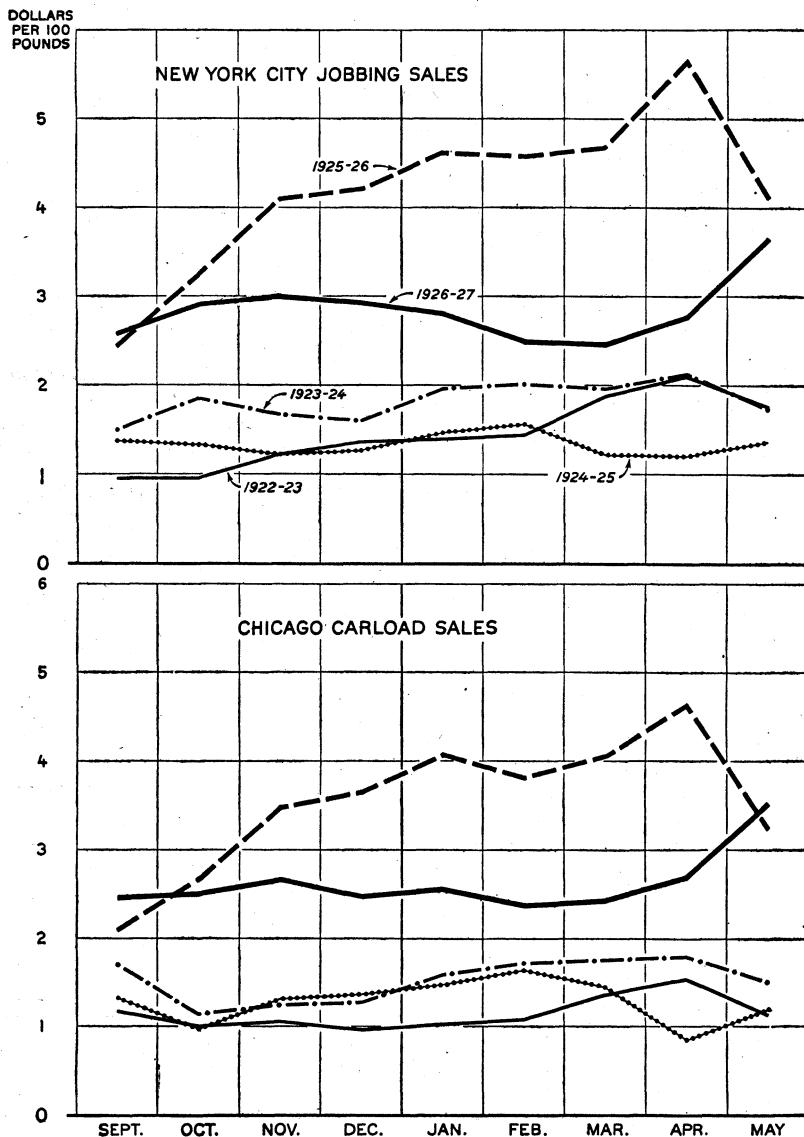


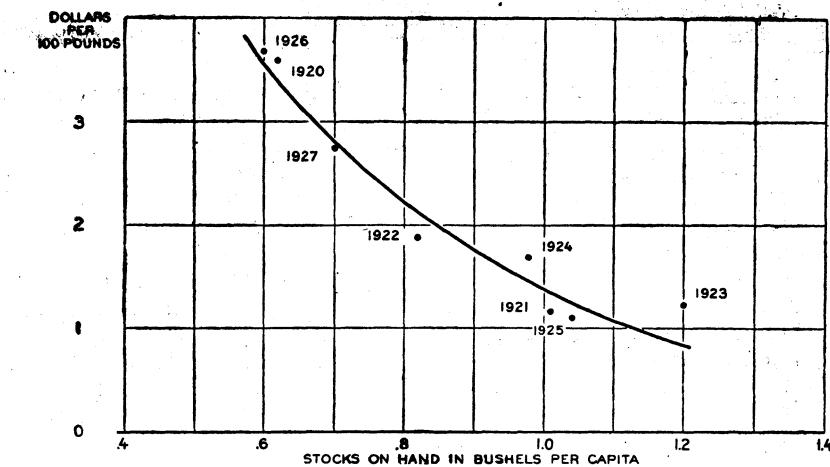
FIG. 8.—WHOLESALE PRICES OF U. S. NO. 1 POTATOES, CROP YEARS 1922-23 TO 1926-27

Late-potato prices during the season in widely separated markets as New York and Chicago show similar trends. Frequently there is a sharp change in the trend during April. (Table 3.)

held by growers and local dealers in 35 late-potato States has been much below 1 bushel per capita population of the United States, the

MARKETING LATE-CROP POTATOES

15



HOLDINGS OF GROWERS AND LOCAL DEALERS

FIG. 9.—POTATO HOLDINGS JANUARY 1 AND CHICAGO FEBRUARY TO MAY AVERAGE PRICES OF U. S. NO. 1 GRADE, CARLOAD SALES

The level of potato prices during the spring, as indicated by the Chicago market, has varied according to the quantity of merchantable stocks held by growers and local dealers in 35 late-potato States. (Table 4.)

late winter and spring prices have been considerably higher than in years when the stocks have been larger than this quantity. During the last eight years the amount of such stocks has varied from six-tenths of a bushel per capita, in 1926, to 1.2 bushels, in 1923. The late winter and spring price in Chicago in 1926 averaged \$3.93 per 100 pounds, which was about three times the average price in 1923.

Growers and shippers who have a considerable quantity of potatoes to dispose of after January 1 will find the report of stocks on hand of considerable value in deciding whether to hold for the late spring market or to sell as soon as possible.

TABLE 4.—Potato stocks in hands of growers and local dealers January 1 and Chicago prices the following spring, 1920–1927

Year	Merchantable stocks in hands of growers and local dealers in 35 States, January 1	Chicago carload sale price per 100 pounds U. S. No. 1 grade	
		Average for February to May	Adjusted average ¹
1920	65,405,000	0.62	3.60
1921	107,991,000	1.01	1.17
1922	90,023,000	.82	1.88
1923	132,493,000	1.20	1.23
1924	110,258,000	.98	1.67
1925	119,223,000	1.04	1.11
1926	70,008,000	.60	3.69
1927	82,389,000	.70	2.75

¹ Adjusted to the basis of 1927 average prices for the period February to May, Bureau of Agricultural Economics index numbers for wholesale prices of Agricultural products being used.

RECENT MARKET TRENDS

The spring of 1917 witnessed extreme shortage and high prices following the very light crop of 1916, but the large supply of early potatoes brought down the price rapidly, and new stock started at around \$2 per 100 pounds. The estimated late crop of 1917 was the largest on record up to that time. Shipments were heavy after the end of the year. Prices continued generally weak until the middle of March, 1918, reaching \$1.25 to \$1.80 per 100 pounds in the city markets, then recovering somewhat after the middle of the month.

The 1918-19 season, except for a late spring rise and less irregularity of price range in winter, was in a general way much like the 1917-18 season. There were heavy crops in both years. The general course of the market for the main crop may be illustrated by the jobbing and car-lot prices of Wisconsin and Minnesota stock, which sold in Chicago late in October at \$1.75 to \$1.90 per 100 pounds and declined to \$1.50 to \$1.60 in the middle of November, recovered to \$1.90 to \$2 by January 14, and closed late in June at \$1.25 to \$1.50. Thus the market during the season showed four leading price movements, all within a relatively narrow range. The low prices reached late in the season were brought about, undoubtedly, by the poor keeping condition of the stock, which rendered it almost unsalable when new potatoes from the South began to arrive.

The production in 1919 was small. The crop of 298,000,000 bushels in the 35 late-crop States averaged only 2.82 bushels per capita. The price, aided by the general post-war inflation, rose rapidly from about \$2.50 per 100 pounds in Chicago in September and October to more than \$7 in May.

With production far above the average, the 1920-21 season opened weak and unsettled, and the price touched \$1.50 per 100 pounds at Chicago during September, and recovered to \$2.25 in October. Then the price moved slowly downward almost continuously, although recovering slightly in January and again the last of February. Late in April came the season's lowest point, 80 to 90 cents.

The 1921-22 season was exceptional in the fact that prices tended mainly downward, although the crop was estimated below average. Actually the harvested crop was large in some sections. The important shipping States—Maine, Minnesota, North Dakota, Colorado, and Idaho—had a large surplus and the car-lot movement was heavy to the States where shortage existed. Prices were fairly steady the first three months, averaging about \$2 per 100 pounds in large shipping markets. In the East prices advanced in January, but after that month the tendency was downward under the pressure of heavy supplies, although at the lowest points, around \$1.50 per 100 pounds in the spring, the price was at least 50 per cent above the level at the corresponding time in 1921.

A crop of record-breaking size in 1922-23 was responsible for a generally low level of prices. Production was abundant in practically all important regions and the supply exceeded the demand. Prices paid to farmers ranged, much of the time, as low as 25 cents per 100 pounds in the far West and 75 cents in the East. City wholesale prices often fell below \$1 per 100 pounds in mid-western markets but ranged somewhat higher in the East, at times exceeding \$1.50.

The crops of 1923 and 1924 were nearly equal in size and were above the average. In 1923 the Chicago October price average was \$1.14 per 100 pounds and in 1924, 97 cents. In both years there was a moderate but steady rise until early spring. In March the 1923 crop averaged \$1.75 and the 1924 crop, \$1.44 per 100 pounds. During the spring there was some decline in prices in both seasons. (Table 3 and fig. 8.)

The 1925 crop was the smallest since 1919. The Chicago price rose from an average of \$2.09 per 100 pounds in September to an average of \$4.62 in April. The rise was steady until January, but during February and March the level was about maintained. A sharp decline took place at the end of the season. The rather small crop of 1926 averaged slightly less than \$2.50 per 100 pounds in Chicago in September and October, and prices were maintained close to this level until April. Near the end of the season a rise of about \$1 per 100 pounds occurred. (Table 3 and fig. 8.)

In the long run the chances of rise or decline in prices between fall and spring appear fairly well balanced. In 7 of the 17 years from 1910 to 1926 there were losses and in 10 there were gains. In some of these years, however, the level was so nearly maintained that the price changes late in the season were not significant, and in cases where the advance was small the slightly higher spring price would not in most instances, outweigh the disadvantage in shrinkage, and extra handling costs in connection with holding the crop for the spring market. It is important to consider these extra costs of handling and shrinkage in deciding whether to sell in the fall or the spring.

The largest rise in price since 1920 occurred in the 1925 season, when the increase from September to April was about \$2.50 per 100 pounds in Chicago and a little more than \$3 in New York City. Declines have been less extreme than the several spectacular advances when measured in dollars and cents. In 1920-21 the decline of 60 cents per 100 pounds in New York between October and May was the largest in post-war years. Considering the eight years since 1919, the Chicago change in price per 100 pounds from October to April has shown an average advance of 83 cents. Five of these years have shown gains, and three have shown losses. This period includes two years of very short potato crops.

The relation between production and prices is notable throughout. (See figs. 6 and 7 and Table 2.)

MARKETING AT SHIPPING POINTS

COMMERCIAL VARIETIES

Comparatively few of the many varieties of potatoes are of much commercial importance. Growers in commercial sections have found it best to confine their planting to one or two varieties which are best adapted to their soil and climate and most in demand in their markets.

The most prominent varieties are of the round-white class such as the Rural and Cobbler groups. The Green Mountain is rather of the long-white type but is sometimes classed commercially with the round whites. The Burbank is of the long-white type. A

number of varieties with russeted or netted skins are important commercially. These include the Russet Burbank and People's (People's Russet). The Late Petoskey (Rural Russet) is also important commercially. Red or tinted varieties which are of some prominence in certain sections include the Early Ohio, Triumph, and Red McClure. The round-white class and the Green Mountain variety comprise the bulk of late-crop sales in many large markets and can be taken as an index of the general market.

SUCCESS DEPENDS ON GRADING

In the marketing process, the handling of potatoes at the shipping point is plainly one of the main items in deciding how the potatoes from one section shall stand in the consuming market in competition with those from another section. Upon the extent to which growers and shippers realize this connection depends the degree of care exercised at the shipping point.

Within the last few years the grading of the crop has come to be considered fundamental to commercial handling. Grading according to accepted specifications checks wasteful and unfair practice on the part of either shippers or receivers and is a protection to consumers as to quality and size. Careful grading can prevent many disputes and heavy losses to shippers. Such losses have always reacted to the detriment of growers. By lessening the element of chance, grading does much toward reducing the margin that must be allowed between the price paid the grower and the price received by the shipper.

State and Federal cooperative inspection service at shipping points is available in most of the important producing States. This Federal-State service is offered for a small charge per car, to cover actual expenses of the inspection. The use of this service is optional with the growers or shippers. Some shipping organizations have their own grades and hire their own inspectors to insure the uniformity of stock shipped under their various marks. Shippers in most sections of the late-crop States have voluntarily adopted the United States standard grades for potatoes, and stock that is not shipped "field run" is graded according to the United States standards. A large majority of sales are on the basis of U. S. No. 1 grade, and this widely adopted grade term has proved especially convenient in quoting. (Fig. 10.) Potatoes shipped "field run" are usually sold as such, but at times adverse market conditions will require them to be graded at the market end before they can be sold. A pamphlet defining the United States grades for potatoes may be had free upon application to the United States Department of Agriculture, Washington, D. C.

For the main crop as a whole, grading in the field is a rare practice. Growers who own graders usually operate them in their barns or storage cellars; the potatoes are stored as dug and are graded as they are hauled to the track. Those who do not have graders must haul their stock to the track and sell at a lower price as "field run" or wait while the buyer runs it over his grader in the car or warehouse, receiving pay for those accepted and hauling the culs back to the farm.

Potatoes graded and sacked on the farm are subjected to much less cutting and bruising than those which, in addition to the initial handling on the farm, are forked into a wagon, then scooped into a warehouse, or perhaps thrown into a car and again scooped to the ends to be shipped in bulk. Too much is expected of the skin of the potato. Potatoes are often treated almost like so much coal.

BASES OF SALE

It is hard to classify the numerous bases of sale on which potatoes change hands in producing sections. At the same shipping point, for instance, one grower may load a car and sell it to a track buyer, or sell it by wire to a city dealer, or consign it to a broker or dealer.

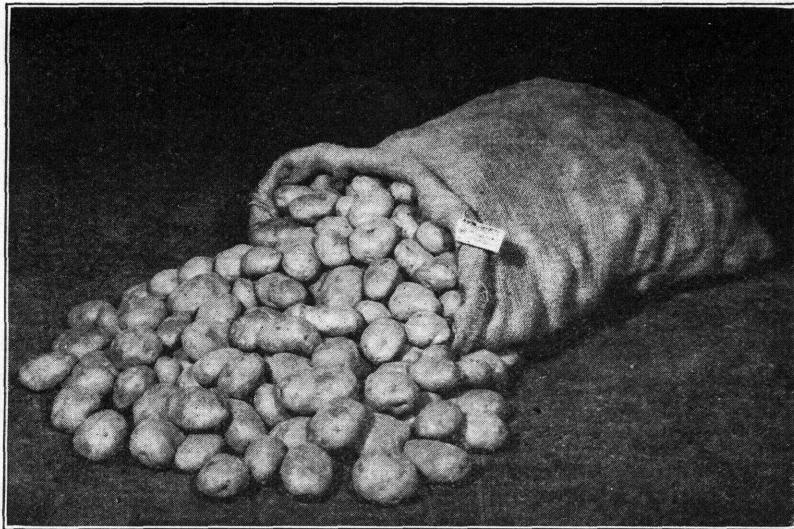


FIG. 10.—A sack of U. S. No. 1 grade potatoes

Another may haul his potatoes to the track and sell to a warehouseman, or to a dealer who is loading a car. Another may sell through his cooperative-marketing association or through an agent or dealer at shipping point who charges a commission for his services. Still another may sell his crop "in the dirt" before it is matured, to a dealer who will dig, sack, and resell it before it is shipped.

But it is possible to make some statement as to the prevailing basis of the final transaction in the various shipping sections. As a rule, in well-established commercial districts that ship a dependable grade, dealers make most of their sales by wire on a delivered basis or "f. o. b. usual terms," the price being agreed upon before shipment, but inspection for grade being allowed at destination before acceptance. Some sales are also made on a cash track basis. This means that the load is sold for cash after it is in the car at the shipping point and accepted by the buyer without the privilege of subsequent inspection or rejection.

The following is a brief explanation of the terms most frequently used in late-crop potato-market news reports in quoting sales at shipping points: "Carloads delivered sales (freight only deducted) rate." The name of an important and representative shipping station is inserted before the word "rate." This term is the one most frequently mentioned which is used as a basis of quotations at late-potato shipping points. The actual sale is made on a delivered basis, the seller agreeing to deliver the car at the buyer's market, subject to inspection at that market to determine that the shipment complies with the agreement at time of sale. The delivered prices to markets at various distances from the shipping point will vary because of the difference in freight rates. For the same reason the delivered price in any market of potatoes from different shipping points may vary. Moreover there is some variation among shippers and shipping sections in their methods of handling the expenses of heating cars in cold weather. By deducting from the delivered prices the freight charges from an important and representative shipping point in a producing area to the markets where shipments from that area have been sold, a uniform basis of quotation is obtained and one which is comparable from day to day. All sale prices reported from various shipping points in the section are adjusted to the basis of shipments from this point. This is done by subtracting from the actual delivered sale prices the freight rates to the markets from the shipping station named in the quotation. The term "freight only deducted," means that the only deduction from the delivered price has been the freight charge and that no deduction has been made for carriers' protective heating charges, car rental, or brokerage, when such was included in the sale price.

"Carloads f. o. b. usual terms" describes a sale in which the buyer pays the transportation charges. The price applies at shipping point. Under its terms the buyer is allowed to inspect the shipment at the receiving market to determine that the potatoes meet the requirements agreed to at time of sale, before accepting and paying for the shipment. The buyer is theoretically responsible for any deterioration in transit, not traceable to the negligence of the shipper. In practice, however, if the shipment arrives in poor condition, the car is frequently rejected by the buyer, or a reduction in price is allowed to him. When an allowance is made to the buyer the shipper usually handles any claim which may be made against the railroad for damage in transit. Shippers often claim that in case of a declining market, buyers will on the slightest pretext reject shipments or ask for an allowance. Buyers maintain that they often accept shipments which do not meet the specified grade when the condition of the market enables them to do so without financial loss. A "carloads f. o. b. usual terms" price on potatoes when compared with a "carloads delivered (freight only deducted)" price may be from 5 to 15 cents less per 100 pounds because it does not include any charges for heating cars, car rentals, etc.

"Carloads f. o. b. cash track" is a term used to denote that the sale has been made for cash at the loading point. Since the seller obtains payment when the sale is made he takes no risk of rejection at the receiving market, and the price is usually slightly lower than the f. o. b. usual-terms price.

"Carloads f. o. b. cash track to growers." This is the same as "carloads f. o. b. cash track," with the exception that it denotes that growers are loading the cars and making the sales.

"Sales on contract for future delivery" is used to describe sales made when stock is to be delivered at a later date, and is generally considered as being a cash transaction when the potatoes are delivered at shipping point.

"Wagonloads, cash to growers" describes purchases in small lots from growers, by dealers and shippers who may be assembling car-loads.

"Warehouse cash to growers" describes a situation where dealers buy from growers for cash and store the potatoes for future shipment.

"Carloads f. o. b. bank guarantee." This is practically an f. o. b. cash sale, although usually made by wire. The buyer's bank guarantees the shipper's bank that the shipper's draft which is usually sent to the buyer's bank with bill of lading attached will be honored.

The usual unit of quotation in late-potato sections and important markets is per 100 pounds, whether sacked or in bulk. In some cases, however, prices are quoted per sack containing a definite number of pounds, or per 180 pounds in bulk.

SHIPMENTS IN SACKS OR IN BULK

Late potatoes are usually shipped in sacks or in bulk. Sacks of various sizes are used, including the 100, 110, 120, and 150 pound sizes. The smaller sizes are used mostly in the West, and the 150-pound size is used mostly in the East and the Central West. There is probably some tendency toward a more general use of the smaller-sized sacks.

The percentage of the crop which is shipped in bulk varies with different districts. For example, in Colorado and Washington practically all shipments are sacked. In New York they are mostly sacked; whereas in Maine they are mostly in bulk. (Table 6.) Realizing the value of the appearance of the package, important shippers in most late-crop sections are making greater efforts each year to use only new sacks for their potato shipments.

In recent years sacked stock has usually brought 5 to 20 cents more per 100 pounds on the markets than bulk stock. Several years ago, before grading sacked stock was practiced as extensively as now, the reverse was true on the Chicago market. The reason was that when buying on the "car-lot outweigh" basis of sale the receiver can see what he is getting. He is permitted to sort out the poor potatoes, and pays only for what he hauls over the scales. For this reason bulk potatoes from the North Central States are sometimes graded more carefully at shipping point than those in sacks. If buyers can obtain as good a grade of potatoes in sacks as in bulk at the same price, they will not go to the expense of furnishing the sacks and labor necessary to sack the bulk stock.

During a period of dull market conditions, bulk potatoes may take a position very different from that occupied on a steady or firm market. Buyers then are more disposed to cull heavily, and sellers are less inclined to object to heavy culling. It is understood that bulk

cars have shrunk as much as 5,000 pounds by culling, whereas in sacks there is no such loss. Not many cars of potatoes in bulk show such shrinkage. In fact, many cars of bulk stock are unloaded with no culs in evidence when the unloading is completed. The difference is merely that in the case of the heavy shrinkages the shipper had put his culs in the car and paid the freight, only to have them dumped out upon arrival, whereas the more careful and experienced shipper had taken out the culs before loading.

It should be borne in mind that cars of bulk stock are frequently held on the team track at the terminal market from one to two days longer than cars of sacked potatoes because of the time required for sacking the stock. This frequently results in demurrage charges, which must be taken into account in arriving at the net returns from the two classes of stock.

TRANSPORTATION

Common box cars are used for the crop marketed in the fall until the carriers require the use of refrigerator or lined box cars.² The date of beginning, varying with the sections, is between the first week of October and the first week of November. The double walls of the refrigerator cars make it safe to ship potatoes in them without a heater, if the temperature stays at 15° F., but at lower temperatures heating of the cars is necessary to prevent freezing injury. The general practice is to place a heater which burns oil or charcoal in each bunker of the refrigerator car. One or both of these may be in operation as the temperature requires. In heating a lined box car, a stove is placed near the center of the car. A shipper may line a box car and arrange to have the same car returned to him for successive shipments.

Several systems of operating the heaters are in use. Under the "carriers' protective service" the railroad company takes care of the heating arrangements for a certain charge in addition to freight. The railroad assumes the responsibility of delivering the potatoes at destination free of freezing injury. Under the "shippers' protective service" the shippers arrange to take care of the heating units and accept the responsibility of protection of the shipment from frost damage. The railroad furnishes transportation for the caretaker. In a few sections shippers may obtain heating service through a company which specializes in this work.

The minimum load for unheated cars allowed by carriers varies considerably with different sections and the rate classification. It may range from 30,000 to 45,000 pounds. Most shippers load 1,000 pounds or more above the fixed minimum, but the freight charge is based on the fixed minimum in cases where the load falls below it. Heaviest loading of late-crop potatoes is practiced at times of the year when it is not necessary to heat the cars. Provision for the best circulation of warm air in heated cars requires special systems of loading.

² Those interested in obtaining information on lining and loading cars for protection against cold should consult the following: UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF MARKETS, PROTECTION OF POTATOES FROM COLD IN TRANSIT—LINING AND LOADING CARS. U. S. Dept. Agr. Farmers' Bul. 1091, 27 pp., illus. 1920.

The freight rates shown in Table 5 illustrate the importance of transportation costs in determining the marketing area for any producing district.

TABLE 5.—*Potatoes, minimum carload freight rates per 100 pounds from various shipping points to certain markets¹*

Shipping point	Destination			
	New York City	Pittsburgh, Pa.	Chicago, Ill.	Los Angeles, Calif.
Presque Isle, Me.	Cents 55½	Cents 60½	Cents 78	—
Rochester, N. Y.	28½	27	39½	—
Cadillac, Mich.	60	36	30½	—
Waupaca, Wis.	67	44½	20½	—
Moorhead, Minn.	82½	60	41½	113
Monte Vista, Colo.	120	99	65	106
Idaho Falls, Idaho	120	112	77	55
Yakima, Wash.	151	135½	110	76
Stockton, Calif.	151	135½	110	35½

¹ These rates are presented only as a matter of information. They are subject to change and can have no standing in adjusting claims with the carriers.

PROMINENT SHIPPING SECTIONS

Sections which are prominent in the shipment of late potatoes include Aroostook County, Me.; Long Island, N. Y.; western New York; eastern Pennsylvania; west central Michigan; central Wisconsin; eastern Minnesota; Red River Valley in western Minnesota and eastern North Dakota; western Nebraska; northeastern, south central, and western Colorado; southeastern Idaho; Yakima Valley, Wash.; and the Delta section of California. (Fig. 11 and Table 6.)

AROOSTOOK COUNTY, ME.

The leading potato district of Maine lies mostly within Aroostook County. The most important shipping points are Caribou, Presque Isle, Fort Fairfield, Houlton, and Limestone.

The Green Mountain, Irish Cobbler, and Spaulding No. 4 are the principal varieties raised for table stock. Maine growers also raise a large quantity of seed stock of these varieties. The Irish Cobbler seed goes mostly to the South Atlantic potato States, the Spaulding No. 4 goes to Florida, and the Green Mountain stock is used mostly in near-by sections.

Machine diggers are used, and the potatoes are picked from the field into baskets and then dumped into barrels. Most storing is in potato warehouses along railroad sidings. The stock is hauled to the track warehouses in barrels and sold by barrel measure (approximately 165 pounds) rather than by weight. This stock is usually graded by the dealers at the warehouses over sizing machines. There are several starch factories in Aroostook County which buy the culls and buy No. 2's as well when there is no demand for them as table stock. A large percentage of the shipments are in bulk, to be sold at city warehouses or sacked there; however, the 150-pound sack is becoming more popular. Sales of Maine stock on the Boston

market are mostly in 100-pound sacks, which are put up in the receiving yards near the city. At New York it is sold on a 180-pound bulk basis or in 150-pound sacks. Most of the business is transacted on a delivered basis. New York and Boston are the leading markets for Maine potatoes. Other important markets are the New England and Atlantic coast cities.

LONG ISLAND, N. Y.

The Long Island potato district is situated in Suffolk County. Riverhead and Bridgehampton are the two principal loading stations. In recent years this section has shipped from 5,000 to 7,000 carloads annually, and there is also a considerable autotruck movement into New York. Some stock is shipped by boat to Connecticut.

There are only two varieties of commercial importance, the Irish Cobbler and Green Mountain. The Irish Cobblers are shipped as

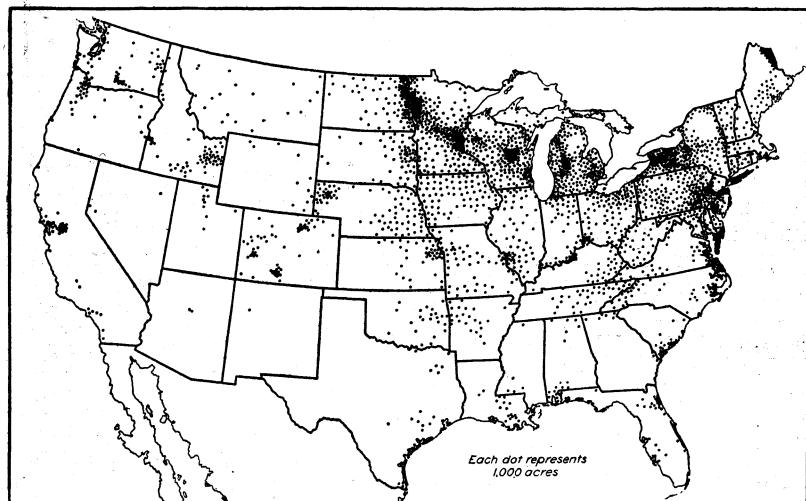


FIG. 11.—POTATO ACREAGE, 1924

Principal potato-producing sections as indicated by potato acreage in 1924.

fast as they are harvested during August and September; the Green Mountains are stored for winter delivery.

There is a fairly active f. o. b. market during the late summer and early fall, and important shipments are made as far west as Pittsburgh and south to Baltimore. There has been a gradual widening of the field of distribution of the Irish Cobbler crop, a few cars going as far west as Chicago. During the winter the larger percentage of the stock goes into New York City.

Probably the main reason for the rather restricted distribution of the late crop is that the New York market pays a greater premium for this stock than can be obtained in more distant markets.

Shipments are made in bulk and in 150-pound sacks. Sacks are generally stenciled and branded. Farmers sell to the dealers who handle the stock at their warehouses, where it is machine graded and either loaded into the cars or stored. Transactions between growers and dealers are made on the bushel basis.

WESTERN NEW YORK

The potato-growing counties of commercial importance in western New York, are Steuben, Monroe, Allegany, Wyoming, Livingston, and Ontario. Some of the dealers make their headquarters in Rochester, but most of them are located at outside shipping points.

The principal varieties grown are of the Rural group. The other commercial varieties are classed with the Rural group as round whites. Elevator diggers are commonly used, and the potatoes are picked from the field by hand. There are not as many warehouses in western New York as in the potato districts of Minnesota, Wisconsin, or Michigan. Some dealers buy and store in warehouses, but most storing is done by the growers themselves in cellars on the farms, and as a general rule the crop is "farmer owned" through



FIG. 12.—Digging late-crop potatoes

the larger part of the season. Growers sell by the bushel rather than on the 100-pound basis. The crop is hauled "field run" and graded by the dealers according to United States grade specification. The majority of sales are made by wire on a delivered basis. A few of the early shipments move in bulk, but during cold weather 150-pound sacks are used. The crop is all marketed east of the Mississippi River; the heaviest receivers are New York City, Philadelphia, Baltimore, Pittsburgh, and Newark.

EASTERN PENNSYLVANIA

Lehigh County forms the center of the most important producing region of Pennsylvania. Probably 90 per cent of the commercial crop of this district belongs to the Rural group. Practically all the

stock is put over grading machines either at the farm or at the cars when being loaded. Most shipments are in 150-pound sacks, although early in the season much stock moves in bulk both by rail and auto-truck.

A large part of the sales are made to local buyers on a basis of cash per bushel in bulk to growers at country loading points. An increasing number of traveling buyers operate throughout the district. The farmers' exchange handles a considerable number of shipments. The principal market is Philadelphia. Other important markets are Baltimore, Pittsburgh, New York, and the smaller cities in this region.

MICHIGAN

Potato production in Michigan is heaviest in Montcalm, Oakland, Lapeer, and Kent Counties. Other important producing counties are Grand Traverse, Mecosta, Missaukee, Oceana, Osceola, Otsego, Wexford, and Leelanau. Commercial carload shipments are of practically no importance in Oakland, and to a lesser extent than might be expected in the counties of Lapeer and Kent. The proximity of Detroit, Flint, and Grand Rapids accounts for the fact that a large part of the tonnage is transported by truck instead of by rail. Greenville is the most important loading and billing point.

In the Lower Peninsula the Late Petoskey (Rural Russet) predominates. The Irish Cobbler is second and comprises possibly 10 to 15 per cent of the shipments. In the Upper Peninsula the Green Mountain is the principal variety produced.

Harvesting is about equally divided between the machine method and the hand-fork method. The crop is hauled and sold in bulk at the warehouses, where grading according to United States standards generally takes place.

Carload sales are made almost exclusively on a "usual terms" delivered basis, with inspection allowed on arrival and sight draft attached to the bill of lading. The 150-pound sack is the container in general demand and use; only an occasional car of 120-pound sacks or an occasional car of bulk stock is loaded.

Some independent dealers operate at numerous shipping points. The Michigan Potato Growers' Exchange is the selling organization (cooperative) for numerous federated local cooperatives.

Ohio, Indiana, Michigan, western Pennsylvania, Chicago, and the District of Columbia are the principal outlets for potatoes from Michigan.

CENTRAL WISCONSIN

Portage, Waupaca, Barron, Waushara, Marathon, and Marinette Counties form the heaviest potato district of Wisconsin. The town of Waupaca is headquarters for the trade. The Rural group forms the bulk of the crop, with the Irish Cobbler and Green Mountain second and third in importance. These and other white varieties grouped together are known as "round whites."

A comparatively small acreage in these counties is given to raising the Triumph, Early Rose, and Early Ohio varieties for seed stock. In Langlade County, with Antigo as the chief loading point, an early fall crop of the Irish Cobbler variety is produced. Elevator diggers are used in harvesting and the potatoes are picked

from the field by hand. Most of the growers store their potatoes "field run" on the farm, but many store in track warehouses belonging to dealers. Virtually the whole crop is sold in bulk by wagon-loads for cash at warehouses. The dealers grade the stock as it is unloaded at the warehouses. Sales by dealers are made both on a delivered and on an f. o. b. basis. The Chicago market takes most of the output from the State, and the price at Wisconsin points is governed chiefly by the condition of that market.

RED RIVER VALLEY OF MINNESOTA AND NORTH DAKOTA, AND OTHER MINNESOTA DISTRICTS

The Red River Valley is the most important potato-producing area in this section and includes districts in both Minnesota and North Dakota lying near the Red River.



FIG. 13.—A track warehouse in the Great Lakes region

About 70 per cent of the potatoes grown in this district are of the Early Ohio variety known commercially as Red River Ohios. Approximately 20 per cent are Irish Cobbler, and the remainder are mostly Triumph.

Potatoes are grown over a wide area in Minnesota, but the district next in importance to the Red River Valley is the sand-land district in the eastern central part of the State, near the Twin Cities. In sections of Minnesota, other than the Red River Valley, round white varieties are most important, followed by the Early Ohio. Triumph and Burbank are also produced.

The 120-pound sack is used in the Red River Valley, but in other parts of Minnesota the 150-pound sack is the usual container. Practically no shipments are now made in bulk.

Most of the grading is done at the warehouse or car door. The U. S. No. 1 grade is the generally accepted standard. Minnesota

has made rapid strides toward a well-graded product, but a large part of the crop still falls short of meeting the U. S. No. 1 grade requirements. Most potatoes are bought from growers by local dealers in wagonloads. Carload sales are made by local dealers, mostly on a delivered basis although some "cash track" sales are made, especially at harvest time. The important market outlet for potatoes from this region is in States bordering on the Mississippi River.

The seed-potato industry is very important in Minnesota, and the certified stock is commanding considerable attention. As seed stock, the Early Ohio still predominates. The Triumph, Irish Cobbler, and Burbank have become important.

COLORADO

The San Luis Valley is the most important potato-shipping district in Colorado from the standpoint of volume of shipments. In recent years this district has shipped approximately 50 per cent or more of the output from the State. The heaviest production in this district is near Monte Vista, Center, and Del Norte, although considerable shipments are made from Alamosa, Hooper, Mosca, La Jare, Romeo, Antonito, and several other loading stations. The principal variety grown is the Brown Beauty, which represents probably 60 per cent of total acreage. The improved Peachblow or Red McClure constitutes about 30 per cent of the acreage; the remainder consists of Russet Burbank, Triumph, and a few Irish Cobbler. A few Triumphs are produced as an early crop and are harvested during the month of August for immediate shipment. Harvest of the later varieties usually begins during the latter part of September.

The northern Colorado or Greeley potato district is centered around Greeley, extending north above Ault, east to Barnesville, and west beyond Windsor. This district ships about 20 to 25 per cent of total output of the State. For the main crop the leading varieties belong to the rural group, followed by Pearl, Triumph, Late Petoskey (Rural Russet), and Charles Downing. The Irish Cobbler, Triumph, and Early Ohio are produced around La Salle and Gilcrest as an early crop and are usually shipped during the latter part of July. The main crop in northern Colorado usually starts to move during the latter part of August or the first part of September.

The western slope produces from 25 to 30 per cent of the total crop of the State, its main producing sections being known as the Carbondale-New Castle district and the Delta-Montrose district. These two sections produce approximately the same quantity of potatoes during normal seasons. In the Delta-Montrose district People's (People's Russet) is the most important variety, followed by Russet Burbank, Late Petoskey (Rural Russet), and a few Charles Downing. The Early Ohio and Irish Cobbler are grown to a limited extent. The Carbondale-New Castle district, which extends to McCoy on the north, Rifle on the west, and Aspen on the south, grows the Russet Burbank mainly, followed by a few Red McClure and People's (People's Russet). The Moffat country, which extends from Steamboat Springs west beyond Craig, ships the Red McClure and Russet Burbank mainly.

TABLE 6.—Outline of prominent late-potato shipping districts

State or section	Station from which market news reports are usually issued	Principal varieties or types	How put up	Principal consuming territory
Aroostook County, Me.	Presque Isle.....	Green Mountain, Irish Cobbler.	Bulk and 150-pound sacks.	New York, Boston, and other eastern markets.
Long Island, N. Y.	New York City.....	do.....	do.....	New York City.
Western New York.	Rochester.....	Round white (mostly Rural group).	Mostly 150-pound sacks.	New York, Pennsylvania, Ohio, and the South.
Eastern Pennsylvania.	Philadelphia.....	do.....	150-pound sacks and bulk.	Philadelphia, Baltimore, Pittsburgh, and other eastern markets.
West Central Michigan.	Grand Rapids.....	Late Petoskey (Rural Russet), Irish Cobbler.	Mostly 150-pound sacks.	Michigan, Ohio, Pennsylvania.
Central Wisconsin.	Waupaca.....	Round White.....	150-pound sacks and bulk.	Illinois and Wisconsin.
Minnesota and eastern North Dakota.	Minneapolis.....	Round white, Early Ohio.	120-pound and 150-pound sacks.	Illinois, Iowa, Missouri, and Minnesota.
Western Nebraska.	Denver.....	Early Ohio, Triumph.	100-pound sacks and bulk.	Missouri, Kansas, and Nebraska.
Colorado.....	Grand Junction and Denver.	Brown Beauty, Red McClure, People's (People's Russet), Russet Burbank Rural group.	96 to 123 pounds per sack.	Colorado, Texas, Kansas, Oklahoma, New Mexico, Arizona, Missouri, Arkansas, Tennessee, Louisiana, and Mississippi.
Southeastern Idaho.	Idaho Falls.....	Russet Burbank, Idaho Rural.	100, 110, 115, and 120 pound sacks.	California, Idaho, Missouri, Texas, Oklahoma, Kansas, and Illinois.
Yakima Valley, Wash.	Portland, Oreg.	Russet Burbank (Netted Gem).	100 to 115 pounds per sack.	Pacific Northwest and California.
Delta section, California.	San Francisco.....	Burbank.....	Approximately 116 pounds per sack.	California, Texas, Arizona, and New Mexico.

Throughout Colorado grades consist of U. S. No. 1, Colorado Standard, and U. S. No. 2. Practically all potatoes shipped from the State are sacked and are sold upon the hundredweight basis, although many sacks shipped run irregular weights from 96 to 123 pounds. Dealers usually try to ship even-weight 100-pound sacks. Growers sort their stock according to the United States and Colorado grade specifications and sell it sacked for cash by wagonloads at warehouses or by carloads. Most northern Colorado and western slope growers sell by wagonloads, but San Luis Valley growers usually sell by carloads. Practically all shippers throughout the State sell on a delivered basis. The Potato Growers' Exchange handles a large volume of shipments. The bulk of Colorado potatoes is marketed in the States of Colorado, Texas, New Mexico, Kansas, Oklahoma, Arkansas, Arizona, Missouri, Tennessee, Louisiana, and Mississippi.

SOUTHEASTERN IDAHO

Idaho potatoes are practically all grown in the southern and eastern parts of the State. The principal districts are the Idaho Falls section, comprising the upper Snake River Valley of eastern Idaho and the Burley-Twin Falls section, taking in the large irrigation projects along the Snake River in the southern part of the State. There is also a relatively small early acreage in the Caldwell section of western Idaho.

The Russet Burbank and the Idaho Rural are the principal varieties. The Russet Burbank or Idaho Russet, as it is generally known,

comprises from 60 to 70 per cent of the crop. In the early districts a few Irish Cobblers are also raised. The crop is practically all raised under irrigation. New seed is regularly obtained from the higher altitude seed districts in the mountain sections of the State, along the headwaters of the Snake River and its tributaries.

The potatoes are dug with elevator diggers, and the greater part of the crop is hauled directly to the farm cellars or to the many trackside cellars and warehouses. A number of community cellars and warehouses, holding from 50 to 200 cars each, have been built in different parts of the State to supplement the farm storages. During the digging season, some potatoes are sorted and loaded directly from the fields, and in the newer producing sections considerable stock is sorted and loaded from the growers' cellars throughout the year. But in most sections of the State the greater part of the crop is regraded in warehouses over power sorters before being loaded. This system was originally developed largely to meet the requirements of the California alfalfa-weevil quarantine, which requires that all potatoes entering that State be regraded at track-side either into new sacks or into sacks which have come from special recleaning plants on the western coast. The regrading so improved the quality of the packs that the majority of all shipments leaving Idaho are now warehouse regraded. The potatoes are delivered to the warehouse in sacks, but the warehouseman furnishes the new or recleaned bags in which the potatoes are to be loaded, and the original sacks are returned to the grower. The growers sell mostly on basis of bulk outweigh, or the quantity of U. S. No. 1 and U. S. No. 2 stock which goes over the warehouse sorters. Most of the shipments are graded according to the United States grade specifications.

The basis of sale is entirely by the hundredweight. Sacks are mostly even weighted, usually at 115 or 120 pounds net when packed, though some run smaller, and the No. 2's are generally packed 100 pounds to the sack.

All methods of marketing are employed, but Idaho is primarily a cash-track market, the great majority of the loaded cars being sold cash-track to local buying brokers or direct representatives of outside distributers. Shipments are made almost entirely in refrigerator cars. The principal markets and marketing territory for Idaho potatoes are Chicago and Los Angeles and Missouri, Kansas, Oklahoma, and Texas, although shipments go to nearly every State in the Union, and to Cuba. Idaho Russets usually bring a premium on the market.

YAKIMA VALLEY, WASH.

Eighty-five to ninety per cent of the potato shipments of Washington originate in the Yakima section, in the south central part of the State, at the east foot of the Cascade Mountains. Potatoes are raised from Prosser to Selah, a strip about 70 miles long and 10 to 15 miles wide. Important shipping points are as follows: Sunnyside, Toppenish, Yakima, Bench, Grandview, Wapato, Harrah, Outlook, Mabton, and Granger. The production of potatoes is increasing rapidly in the adjacent Kittitas Valley, centering around Ellensburg, and to the trade these potatoes pass as "Yakimas."

Irrigation water is plentiful in practically all seasons, and the steady growth that results from its use gives large size to the greater part of the crop. The Russet Burbank (Netted Gem) is raised almost exclusively. Stocks not sold at digging time are stored in pits and cellars on the farm and disposed of during the winter or spring.

The growers sell on the ton basis, which ordinarily means hauled to the warehouse at the railroad in field sacks, where they are run over sizing machines and put into new sacks holding 100 to 115 pounds. Payment is made for the quantity of agreed grade actually packed. The use of branded sacks is increasing.

The United States grades are the basis for dealing, although sales are mostly on a basis of percentage of No. 1 stock in the lot.

Yakima potatoes are marketed mainly in the Northwest and California. Some move east to Chicago and other eastern and southern markets.

The growers are not organized. Several shippers operate throughout the valley and sell on usual terms or buy on a brokerage basis. In ordinary years many cash buyers operate.

DELTA SECTION, CALIF.

The Delta Country of California, where the greater percentage of California's potato crop is grown, is at the junction of the San Joaquin and Sacramento Rivers, near Stockton. Long potatoes belonging to the Burbank group are grown almost exclusively. The Burbank variety produces heavily in this section, and the trade supplied from this territory expects and prefers them. The sacked potatoes are hauled to the river bank, where they are placed on boats or barges and transported to Stockton, Antioch, San Francisco, or other places, and loaded into cars for shipment.

Growers sell their potatoes by the sack, delivered at the river bank. The sacks are not even weights, but it is understood that they must contain at least 116 pounds. The prevailing basis of sale by dealers to the trade is by the 100 pounds.

Delta potatoes are marketed chiefly in San Francisco, Los Angeles, and other California cities, with a small percentage going to Arizona, New Mexico, and Texas. Early in the season a few go to the Northwest.

MARKET PRACTICE AT A NORTHERN SHIPPING POINT

A description of what takes place during an average day in the potato season at the important shipping point of Waupaca, Wis., will give an idea of the activities at most of the shipping points in the Northern States.

At any of the established northern shipping points during times of moderate or slow demand the price trend depends largely upon the condition of the market most important to the district in question, and upon the size of the movement the day before. The volume of inquiry as indicating market tone is also considered. Each morning from 10 to 25 dealers at Waupaca and points within a radius of 50 miles call up the Waupaca office of the Bureau of Agricultural

Economics. They get the Chicago market information as soon as it comes over the wire, and the number of cars shipped the previous day for the country as a whole and from the important Northern States separately. On this information they form an idea of the supplies for their principal markets. The probable price is then estimated, the basis being approximately the Chicago market less the freight and the dealer's margin for handling. As a rule, the dealer's margin is narrower in the fall than in the winter months because of the lower expense of handling immediately and shipping without heating, and because the stock held for spring shipments must be carried and stored for several months. Competition among resident dealers and track buyers during the fall months also tends to narrow the margin by raising the growers' price.

Growers must haul from 5 to 15 miles. Because of the risk of freezing at night it is the general practice to load the wagons in the morning, and the loads begin to arrive at the track about 9 a. m. Normally there is very little bidding for loads at Waupaca, but the established dealers have their lists of growers who haul to them regularly. The load is weighed on a wagon scale. A few growers haul in sacks to prevent bruising the stock, but practically no grading is done on the farms, and the sacks are emptied at the warehouse. The potatoes are unloaded into a chute or upon a belt which carries them to a power-operated screen. The culls (and the No. 2's if the dealer is not buying No. 2's) are loaded into the wagon again, which is then weighed a second time to get the net weight of the potatoes accepted. If the grower is merely storing with the dealer, he gets a receipt for his load; if he is selling, he gets cash.

In the better-equipped warehouses the potatoes, after being graded, are carried to overhead distributing runways, which may be adjusted to drop them into any one of the various storage bins. If it is the intention to hold the potatoes for some time they are stored in bulk, as shrinkage and possible decay of some of the tubers make it impracticable to keep them long in sacks. Before being shipped, sacked potatoes are tagged according to grade. For bulk shipments the grade must be stated on the invoice.

Virtually all cars handled by the resident dealers are loaded by their own men, as they prefer to do this rather than to depend upon the growers' comparatively limited experience in grading and packing. In freezing weather refrigerator cars are used for shipping, because of the protection afforded by their double walls. If there is a shortage of such cars, some shippers use box cars fitted with a false floor and lined with lumber and building paper.

There are two arrangements for the protection of potato shipments between October 15, and April 15 on all roads west of Chicago. These arrangements are termed "shippers' protective service" and "carriers' protective service." Under "shippers' protective service" there is a small charge in addition to freight for use of the car. The railroad allows free transportation for a caretaker, or stoker, to the destination and back, and any lining or stoves used in the car are returned to the shipper at half rate. No guarantee of frost-free delivery is made. Under "carriers' protective service" the charge, in

addition to the freight rate, amounts to about 5 or 6 cents per 100 pounds for the average haul. The railroad guarantees frost-free delivery. Usually an oil heater is placed in each bunker. The employee in charge is instructed to close the vents when outside temperature reaches 32° F., start one heater at 20°, and both heaters at zero.

Sales are made mostly by wire. When the market is strong and buyers are eager to get potatoes the usual message is one asking the shipper to quote on a given variety f. o. b. or delivered at destination. The shipper makes an offer and, if the other party confirms the price, the sale is considered closed, and the car is shipped as directed, the telegram being kept as a record of the sale. When the market is dull and sales slow, many shippers telegraph quotations to a number of their trade connections, usually by night letter. If the trade "comes back" the following morning, the shipper confirms the quotation in question, and the sale is closed.

It is a common sight, especially in times of slow movement, to see several representatives of different railroads visiting the shippers of the town, soliciting business for their respective companies. Most of the railroads represented do not touch the shipping point itself, but they may get more or less business according to how the shipments are routed to their respective destinations. The difference in any two routings to one destination is largely a matter of promptness of delivery and of treatment by the carrier in the adjustment of claims, the tariff to a given destination over one road being the same as over another, regardless of any difference in distance.

CITY MARKETS

As a rule, northern city markets draw their late-crop supplies mostly from the nearest large producing sections. Eastern cities receive their supplies mostly from Maine, New York, and Pennsylvania, and midwestern cities mostly from the Great Lakes region, although a considerable quantity of potatoes from the mountain and intermountain sections are marketed in the Middle West. Supplies for the far-western cities originate in the Pacific Coast or intermountain regions. Western potatoes are important in the late-crop receipts on southern markets. (Table 7.)

TABLE 7.—*Carload potato supplies of 36 cities, 5-year average, calendar years 1922-26*

City	Average annual carload unloads	Per cent of carload supply received from late-shiping sections	Principal source of supply of late potatoes	Leading varieties or types, late-crop receipts
Atlanta.....	Cars 805	Per cent 60	Minnesota, New York, Maine, Idaho, Colorado.	Round white, russeted varieties.
Baltimore.....	2,503	50	New York, Pennsylvania, Maine, Maryland	Round white, Green Mountain, McCormick.
Birmingham.....	761	65	Minnesota, Colorado, Wisconsin, Idaho.	Round white, russeted varieties.
Boston.....	9,063	83	Maine, Canada, New York	Green Mountain.
Buffalo.....	1,034	25	New York, Michigan	Round white.
Chicago.....	14,727	74	Wisconsin, Minnesota, Michigan, Idaho.	Round white, Early Ohio, Russet Burbank.
Cincinnati.....	3,104	72	Minnesota, Michigan, Wisconsin, North Dakota, Idaho.	Round white, Early Ohio.
Cleveland.....	3,330	58	Michigan, New York, Maine	Round white, Late Petoskey (Rural Russet).
Columbus.....	1,354	72	Michigan, Minnesota	Round white, Late Petoskey (Rural Russet).
Dallas.....	870	84	Colorado, Idaho, California	Rural group, Russet Burbank, Burbank, Brown Beauty, white varieties.
Denver.....	1,405	98	Colorado, Idaho, Utah	People's (People's Russet), Russet Burbank.
Detroit.....	3,216	61	Michigan, Idaho, Canada	Round white, Russet Burbank, Rural group.
Ft. Worth.....	602	83	Idaho, Colorado California	Rural group, Russet Burbank, Burbank, Brown Beauty, white varieties.
Indianapolis....	1,718	75	Michigan, Wisconsin, Minnesota	Round white, Late Petoskey (Rural Russet).
Kansas City....	2,686	83	Minnesota, North Dakota, Colorado, Idaho	Early Ohio, Russet Burbank, round white, Brown Beauty, People's (People's Russet).
Los Angeles....	5,584	100	California, Idaho, Oregon, Washington	Burbank, Russet Burbank.
Louisville.....	873	78	Wisconsin, Minnesota, Michigan	Round white, Early Ohio, Late Petoskey (Rural Russet).
Memphis.....	1,016	77	Nebraska, Minnesota, Colorado, Idaho	Triumph, white varieties, russeted varieties.
Milwaukee.....	1,067	50	Wisconsin	Round white.
Minneapolis.....	789	83	Minnesota	Round white, Early Ohio.
Newark.....	3,287	63	Maine, New York	Green Mountain, Round white.
New Orleans....	1,193	78	Colorado, Idaho, Minnesota	Russet Burbank, round white, Brown Beauty, Burbank.
New York.....	21,627	63	Maine, New York	Green Mountain, round white.
Omaha.....	1,136	85	Minnesota, Nebraska, Idaho, North Dakota	Early Ohio, Russet Burbank.
Philadelphia....	8,334	56	Pennsylvania, Maine, New York	Round white, Green Mountain.
Pittsburgh.....	4,291	63	Michigan, New York, Maine, Pennsylvania	Round white, Late Petoskey (Rural Russet), Green Mountain.
Portland, Oreg....	702	99	Washington, Oregon	Russet Burbank.
Providence.....	1,518	85	Maine	Green Mountain.
St. Louis.....	3,570	72	Minnesota, Colorado, Wisconsin, Idaho	Russet Burbank, round white, Brown Beauty.
St. Paul.....	305	78	Minnesota	Round white.
Salt Lake City....	374	94	Idaho, Utah	Russet Burbank.
San Francisco....	3,490	100	California, Washington Oregon, Idaho	Burbank, Russet Burbank.
Seattle.....	2,161	100	Washington	Russet Burbank.
Spokane.....	270	99	do	Do.
Toledo.....	965	50	Michigan	Late Petoskey (Rural Russet).
Washington....	1,721	60	Michigan, New York, Maine, Pennsylvania	Late Petoskey (Rural Russet), round white, Green Mountain.

NEW YORK CITY

The New York market has two principal sources of supply of winter or late-crop potatoes. Maine and Long Island furnish 95 per cent of the supply, and the remainder comes mostly from western New York, Pennsylvania, and scattered shipments from Canada, Michigan, and Wisconsin. Many of the dealers buy direct or through brokers, others operate mostly on consignment, and some have their own representatives in the producing sections, chiefly in Maine. Many of the important dealers make a specialty of potatoes and handle cabbage, onions, and turnips on the side. They have their warehouses and offices at or near the various terminals. There are several receiving terminals or team-track yards, where potatoes are handled. These are of much more importance in the marketing of old potatoes than are the perishable terminals on the Hudson River piers. The principal yards are Harlem River, Thirty-third, Bushwick, Wallabout, Port Morris, and Hunter's Point.

Most of the wholesaling is done on a less-than-carlot basis, but on an advancing or strong market there may be a considerable amount of carload sales. Chain stores buy in carloads. A large amount of the receipts is in bulk and is sold on the 180-pound basis. For sacked stock the 150-pound size is used almost exclusively.

The majority of the receipts are distributed throughout the metropolitan area, which includes territory in northern New Jersey, southern New York, and part of Connecticut. Many of the larger cities in the area (especially Newark) receive their supplies direct in car-lot shipments from the producing sections. A few cars are diverted from the outlying yards to markets farther south, but this is only a small portion of the business.

The Green Mountain variety is preferred during the late-crop season. The use of large-sized potatoes from the far West, especially Idaho, is being developed among the hotels and the better class of restaurants. Potatoes grown in dark soil are generally discounted and are hard to move, especially on anything but a very active market. A well-graded U. S. No. 1 potato, which is over 2 inches in diameter but not oversized, is preferred, and there is only a limited demand for small or No. 2 stock. The Long Island Green Mountain at all times commands a premium over stock from any other section. This is especially noticeable during the late winter months, when supplies from this section are limited.

CHICAGO

Chicago is the main gateway to the South and Southwest for stock from the heavy-producing sections of the North. Its supplies come from nearly all of the principal producing sections, but Wisconsin, Minnesota, Michigan, and Idaho are the most important sources of shipments.

Fully 90 per cent of the local sales are in carload quantities to jobbers, who sell direct to retailers. Many jobbers do some buying in the country from time to time, but they generally look to the large car-lot receivers here for their supplies. The 150-pound sack is most commonly used for white stock and the 120-pound sack for Early Ohios. Bulk stock is an important factor for local trade

only, but high labor costs of sacking in Chicago is tending to discourage this method of loading. The price received per hundred-weight is sometimes more than for sacked stock, but considering the shrinkage in sacking bulk stock it is doubtful if the actual returns are as great as those for sacked stock.

The most popular varieties are of the Rural group, Irish Cobbler, Early Ohio, Russet Burbank, and Brown Beauty. Potatoes of the Rural group from Wisconsin and Idaho Rurals are preferred over those from other sections, and Early Ohios from the Red River district of Minnesota and North Dakota bring a premium over those from the sand-land districts. Idaho Russet Burbanks are preferred over those from other sections, although Washington Russet Bur-



FIG. 14.—New South Water market, Chicago

banks sell well at prices comparable to those received for the general run of Idaho stock.

There are several advantages in having cars arrive about the middle of the week. Heavy accumulation of supplies on Monday causes buyers to hold off, especially on a dull or declining market, and trading slows down the last part of the week.

The local car-lot trading is done in the various railroad yards, where the buyer has the opportunity of inspecting cars. After purchases are made, cars are unloaded over the railroad scales and hauled to the stores of the jobbers. A considerable portion of the business is selling by wire to outside points. These sales are of cars on track at Chicago or rolling to Chicago. The principal potato yard is on Grand Avenue. There are approximately 20 wholesalers, or car-lot receivers and about 40 jobbers.

BOSTON

The principal sources of supply of late-crop potatoes for Boston are Maine and the eastern Canadian Provinces, especially New Brunswick and Prince Edward Island. The stock is bought mostly f. o. b. by Boston receivers who sell to jobbers in less-than-carload lots of from 5 to 100 or more bags, generally 25 to 50. Very little stock is received on consignment, except when the market is so weak as to practically prohibit f. o. b. sales.

During the past few years a diversion privilege has been in effect, whereby reshipped stock from Boston takes the through rate of freight from point of origin to final destination. This has resulted in the increasing importance of Boston as a distribution center, the stock offered being distributed to points as far as Pittsburgh and Cleveland. Brokerage sales have increased very considerably through use of this diversion privilege. These are practically the only car-lot sales made, as the receivers very seldom sell an entire car to the jobbing trade.

Most of the stock is received in bulk and is sacked by local dealers in their own sacks, usually of 100 pounds each. However, there appears to be a growing preference for 150-pound sacks bearing the shipper's brand and put up at point of shipment.

Many Boston brokers act as the direct agents of Maine shippers and sell their stock at all points where Maine potatoes are found. Thus, the Boston market is often as important an f. o. b. center as Maine shipping points.

The local trade prefers Green Mountains, although Irish Cobblers are used extensively during the first of the season. Spaulding No. 4 and Triumph are in very little demand as table stock, and most of these varieties are shipped to Southern States for seed purposes.

Thursday is generally accepted as the best market day, followed in order by Monday, Friday, Wednesday, Tuesday, and Saturday.

The Boston potato market is located in the Charlestown district and consists of a long shed owned by the Boston & Maine Railroad, divided into a number of doors or sections and leased to individual receivers. Few sales are made on the "street" along with other fruits and vegetables.

PHILADELPHIA

Philadelphia's supply of late potatoes comes mostly from Maine, Pennsylvania, and New York. Receipts from Maine have increased considerably during the last five years. Trucked-in stock is an important factor in the Philadelphia market beginning with the New Jersey season and continuing until stock in near-by Pennsylvania counties is cleaned up, usually about December 1.

Trucked-in potatoes are handled largely by jobbers on the Dock Street and Callowhill Street markets. Carload receipts are handled by receivers at the produce terminal located on Oregon Avenue, just above Delaware Avenue and to a limited extent at Second and Master Streets, the latter being mostly bulk stock. About 12 to 15 dealers handle potatoes in carloads, although the number may increase or decrease from season to season, depending on conditions. Probably not more than 25 per cent of the total car-lot receipts are handled on a consignment basis in average years.

Straight carload sales are not of particular importance in the Philadelphia market, and prices are usually within the range of wholesale prices. Trucked-in stock is jobbed out in lots of 5 to 25 or more sacks. Sacks holding 100, 120, and 150 pounds are used. There is a decided preference for sacks smaller than the 150-pound size, the 120-pound sack probably being most popular. There is a limited demand for bulk stock. Philadelphia is not a large distributing center for potatoes in car lots. Dealers in surrounding towns buy in Philadelphia mostly in l. c. l. lots and transport their stock by truck.

The Green Mountain is a popular variety, as are also varieties of the Rural group from Pennsylvania and New York districts. Irish Cobblers are discounted after Green Mountains and varieties of the Rural group come on the market. Potatoes from Lancaster and Bucks Counties, Pa., invariably bring a premium over stock from other near-by counties. Monday, Tuesday, and Thursday are the best market days for potatoes. On account of local credit arrangements Friday is usually the lightest day of the week.

BALTIMORE

New York, Maine, and Pennsylvania are the principal sources of late-crop shipments to Baltimore. In a normal year perhaps one-third of the receipts are on consignment. Not many sales are made in car-lot quantities. Jobbing sales usually range from 15 to 100 sacks. The quantity of late potatoes distributed from this market to the surrounding territory is not large. First preference is for Pennsylvania round white, followed by Maine Green Mountain. There is a growing preference for 100-pound sacks.

Monday, Thursday, and Friday, in the order named, are the best market days. There are approximately 50 wholesale dealers. The market is located at Bolton Station, at Oliver and Cathedral Streets.

WASHINGTON, D. C.

The majority of late-crop potatoes on the Washington market come from Michigan, New York, Maine, and Pennsylvania. Idaho sends a few cars, most of which are fancy baking stock. Most shipments of late potatoes are handled through brokers, but some are received on consignment direct from shippers. Rejections are nearly all sold in the city for shippers' account. There are very few car-lot sales on track. Sales to jobbers are not as common as are those of the more perishable crops, for the reason that smaller dealers are able to dispose of solid cars. Most of the chain-store purchases are made through brokers or shipped direct from the company's agents in the producing centers. Very little stock goes to outside markets, because the small towns, like the small dealers, can handle straight carloads.

Until 1926 the 150-pound sack was used almost exclusively, but since that time 120-pound sacks have become increasingly popular. Practically no bulk stock is sold. Washington demands a potato of good quality and appearance. When equally free from disease, Green Mountains from Maine bring a premium over Late Petoskeys (Rural Russets) from Michigan, which usually rank second, and over round whites from New York, Pennsylvania, and Minnesota.

Potatoes probably sell more freely on Friday than on any other day. Tuesday probably ranks second, followed by Thursday, Monday, Wednesday, and Saturday. About 15 houses buy potatoes in carloads.

PITTSBURGH

Pittsburgh draws largely on Michigan for its winter supply of potatoes, though in late years Maine has been forging rapidly to the front. New York and Pennsylvania, in the order named, also furnish a considerable part of the winter supply. Local supplies are practically non-existent, for Pittsburgh depends almost exclusively on shipped-in stock.

Fully 90 per cent of the receipts are bought outright; few are handled on consignment or on joint account. Car-lot sales form an important part of the business, for many of the chain stores and



FIG. 15.—Pittsburgh potato market

larger dealers buy from the receivers in car lots. Jobbing lots range from 5 sacks upward. The 150-pound sack is the most popular size. Some bulk stock is handled during the fall months, but this method of shipment meets with little favor with the local dealers.

Pittsburgh holds an important position as a potato-distributing center. Fully 40 per cent of the arrivals are diverted or sold to markets within a 50-mile radius.

The most popular type is the round white, although there is also a good demand for Green Mountains. Practically all sales are made on the basis of United States grades, buyers being willing to take stock from any district so long as it meets grade and varietal requirements.

Monday is the most important market day for potatoes, many out-of-town buyers being on the market on that day; Wednesday and Thursday rank next; Friday is devoted almost entirely to the local buyers, who usually purchase in small lots; Tuesday and Saturday are the dullest days.

Pittsburgh's wholesale market is located between Sixteenth and Twenty-third Streets in the Penn Avenue district. It embraces seven city blocks; the capacity of the yard is between 600 and 700 cars, which is usually adequate. Twelve to fifteen dealers handle potatoes exclusively, whereas probably 10 or 12 others handle them as a side line.

CLEVELAND

Late-crop receipts in Cleveland are principally from Michigan, New York, Maine, Ohio, and Wisconsin, with some shipments from other States farther west. Local supplies are not of great importance.

Generally about 85 per cent of the receipts are bought outright and 15 per cent handled on consignment. Jobbing sales are usually in lots of 25 to 50 sacks. The 150-pound sack is most widely used. There does not seem to be a preference for the smaller sacks. Practically all of the northwestern part of Ohio is supplied with potatoes largely through the Cleveland market. Monday, Wednesday, and Friday are the busiest days for the jobbing trade.

There are approximately 20 wholesale dealers and about the same number of jobbers. The market covers approximately three blocks near the Nickel Plate team tracks.

DETROIT

The surrounding producing sections furnish a large part of the Detroit receipts of potatoes. Large quantities are brought in by autotruck. Usually there is not a large volume sold in car lots. Jobbing sales are frequently made in lots of 15 to 50 bags.

The 150-pound sack is most widely used and is preferred by shippers and wholesalers. There is a noticeable demand for 100 or 120 pound sacks by retailers, especially the chain stores. Very little stock is handled in bulk.

The round-white type of potato especially from Michigan is most popular with the trade. The Russet Burbank and Idaho Rural from Idaho are also popular.

Four or five of the larger dealers seem to dominate the potato market. About 75 per cent of the stock is usually bought outright and 25 per cent received on consignment. Most jobbing sales are made from the cars at the team tracks. There is usually a charge of 10 cents per sack for delivery. Receipts are generally heavy on Monday and Tuesday. Thursday and Friday are good selling days.

CINCINNATI

Michigan, Minnesota, Wisconsin, North Dakota, and Idaho are the principal States shipping late potatoes to Cincinnati. In seasons when the Early Ohios from Minnesota and the Dakotas are of good quality the trade seems to prefer this variety. Round-white stock from both Michigan and Wisconsin meets a fair demand, with probably some preference for the Michigan stock. The local supply is not important.

Probably two-thirds of the Cincinnati receipts are usually purchased outright, the remainder being handled on consignment. It is a great carload-distributing center, many cars being diverted in

transit. Probably 15 per cent of the carloads of potatoes arriving in Cincinnati are diverted to outside markets. Three or four Cincinnati firms specialize in potatoes.

There is a growing preference for smaller sacks. Many dealers favor the 100-pound sack over other sizes.

Most of the potato business is done in the Plum Street railroad yards. The greatest activity is on Monday. Wednesday and Friday are also important days. On Tuesday and Thursday trading is light, and on Saturday little business is done.

ST. LOUIS

Colorado, Idaho, and Minnesota supply most of the late potatoes that are unloaded in St. Louis. During July and August the Kaw Valley crop, together with home grown, supplies the local needs.

Jobbing seems to be on the decline on this market and, although a few of the older houses still rely strongly on this method of distribution, there is a growing tendency toward car-lot track business. Most car-lot sales are transacted on invoice weight; the outturn weights are used for off-condition stock only. Since chain groceries have become such an important factor in the distribution of perishables, many firms are purchasing their stock in carloads for sale in small lots to regular retail customers and do not do a regular jobbing business with potatoes. Chain stores purchase practically all their stock in carloads either through local brokers or their own field representatives.

Sacked stock constitutes about 90 per cent of the local unloads, preference being for the 100 or 120 pound sack. Home-grown stock is mostly hauled in bulk from the surrounding producing sections and weighed over city scales before offered to the trade. The large 150-pound or 180-pound sack is discounted in price.

The Russet Burbank is the preferred late variety. The Colorado Brown Beauty and Red McClure also find a ready sale. Other important winter varieties are the Early Ohio and Irish Cobbler from Minnesota and the Dakotas, the Triumph from Nebraska, and the Idaho Rural from Idaho. In some years varieties of the Rural group from Wisconsin are also used freely. Kaw Valley and home-grown stock is mostly of the Irish Cobbler variety, although the Early Ohio is sometimes grown in commercial volume in this vicinity.

The greatest market activity generally occurs during the middle of the week, and Saturday is only a clean-up day, with trading limited.

KANSAS CITY

The principal source of late potatoes for the Kansas City market is the region including Minnesota and the Dakotas. The favorite variety from this region is the Early Ohio. For fancy trade, Kansas City draws Russet Burbanks from Idaho and Washington, and Brown Beauties, Russet Burbanks, and People's (People's Russets) from Colorado.

Some wholesalers have buying representatives at shipping points. Brokers are important in the Kansas City trade. Probably 85 per cent at least of the fall and winter receipts are sold on a car-lot basis. Many jobbing sales are on a basis of 50 sacks, which is con-

sidered a truck load. Sacks containing 100 to 120 pounds are used for potatoes arriving in Kansas City. Even-weight new sacks (those containing the same number of pounds per sack) will generally command a premium of 10 cents per sack over uneven-weight, second-hand sacks. For western stock the most desirable weight per sack is 100 pounds. On a slow market these may job at the same price as 105 or 110 pound sacks. Kansas City is not a good bulk market.

Kansas City is an important car-lot distributing point. Practically all potatoes are sold on the basis of United States grades. Monday, Wednesday, and Friday are the heaviest market days of the week. The following are the approximate number of potato dealers according to their prevailing type of business: Brokers, 7; wholesalers, 7; car-lot buyers and jobbers, 18.

OMAHA

A preference exists on the Omaha market for Minnesota and North Dakota Early Ohios. Early Ohios from Nebraska, Russet Burbanks and Idaho Rurals from Idaho, and various varieties from Colorado are important on this market.

Most cars of potatoes handled by Omaha dealers are bought f. o. b., rolling, or delivered. Not many cars are consigned to this market. The quantity of potatoes distributed in carloads from Omaha to the surrounding territory is considerable and probably totals one-third or more of the Omaha receipts. The 120-pound sack is the most popular size. Wholesalers report little difference in demand for potatoes on the various days of the week. Thursday and Friday average perhaps a trifle better than the other days. There are about a dozen wholesale potato dealers in Omaha. Most of the chain stores buy direct from the shippers.

ATLANTA

Practically all sales are made through Atlanta brokers, and most sales are on a delivered basis. Few cars of potatoes are consigned to this market, and there are few track sales of carloads. A few of the largest wholesalers purchase their supplies in carloads; the smaller dealers buy from jobbers. The average jobbing sale consists of from 25 to 50 sacks. The local dealers prefer 150-pound sacks for northern potatoes and 110 or 120 pound sacks for stock from the Western States. No potatoes come to the Atlanta market in bulk. Atlanta is becoming more of a distributing center for potatoes each year. In 1926, 170 cars were diverted from Atlanta to markets in the surrounding territory. Practically all of these cars were bought and sold on the basis of United States grades, and most of them were stopped at Atlanta for Government inspection before being diverted to the purchaser.

Round-white stock has been preferred on the Atlanta market and in the markets in this territory, but Russetted varieties are gaining in popularity each year. The Early Ohio is almost unknown here.

In 1926 approximately 50 per cent of the late-crop potatoes used in Atlanta came from Idaho, Colorado, and Washington, whereas over 30 per cent were from Minnesota and Wisconsin.

There are more jobbing sales made on Monday and Thursday than on the other days of the week.

The wholesale produce houses, jobbers, and brokers in Atlanta are practically all located in one row of buildings near the center of the business district of the city, with convenient team tracks for unloading produce. There are 12 wholesale dealers on the market.

NEW ORLEANS

Most of the late-crop potatoes used in New Orleans are from the Western States, principally Colorado, although in some years heavy supplies come from the North Central States.

Practically all receipts are sacked, the usual size of sacks being from 100 to 120 pounds, although a few 150-pound sacks are handled. The Colorado Brown Beauty is much preferred as a late-crop potato, with the Burbank from the West and North second in demand. Most sales are on a basis of U. S. No. 1 grade, although in years when the crop is below average quality there is considerable trading in combination grades. The trade has a very strong preference for clean, medium-sized potatoes.

Most sales are in jobbing lots, frequently containing about 20 sacks. Some car-lot sales are made for export to Panama and Cuba. With the exception of those exported, practically no potatoes are redistributed out of New Orleans. Stock is generally bought through brokers for delivery at New Orleans. Only an occasional car is received on consignment.

The principal market is on Poydras Street, about four blocks from the Louisville & Nashville Railroad warehouse, where most potatoes are unloaded. There are about 15 wholesale receivers, who do a large part of the city's jobbing business.

There is little difference in the amount of trading on different days of the week.

SAN FRANCISCO

San Francisco is probably one of the most particular markets in the United States. There are two distinct classes of trade—the hotel and restaurant trade and the general consuming public. The hotel and restaurant trade demands practically all "bakers" or peeling-size potatoes; the general consuming public wants a carefully graded, medium-sized potato. Jobbers are reluctant to handle or buy cars that show any great amount of defects and will demand that stock be repacked if it shows any trace of decay. Potatoes of $2\frac{1}{4}$ inches or less in diameter are considered "peddler" stock and are sacrificed for about one-fourth the price of large stock.

From May until September this market secures most of its supplies from California sections, after which time Oregon, Washington, and Idaho contribute heavily to the receipts. There is practically no demand here for round potatoes of any variety, with the exception of the Garnet Chili during May. Long white varieties are by far the most popular.

LOS ANGELES

California potatoes, mostly from the Stockton district, dominate the Los Angeles market. Idaho is second, with some supplies from Washington, Oregon, Nevada, and scattered receipts from other States. Most arrivals are by rail, although a few cars come by boat from Washington, Oregon, and occasionally from the Stockton district.

Beginning about March 1, local stock appears on the market and practically supplies the entire demand during May, June, and the first half of July. Although a small fall crop is produced locally it seldom reaches the market, but is used for seed.

The market demands a long white type of potato and prefers the Stockton Burbank. The Idaho Russet Burbank is a close second. Round stock from all districts is discounted heavily except locally grown British Queen and White Rose during spring and summer. Red varieties have never been popular.

Most stock is sold on arrival after the buyers' inspection. Stockton potatoes have never been graded to United States standards, but the best selling river brands are as good or a little better than U. S. No. 1 grade. Stockton potatoes are usually called "fancy" or "choice"—indefinite terms, since one shipper's "choice" may be better than another's "fancy."

Idaho sales are usually based on U. S. No. 1 grade potatoes. Commercial and No. 2 stock from all districts find a limited demand, but the market is very sensitive to heavy receipts of lower grades and easily becomes overloaded.

There is little difference in the market on the various days of the week, although Saturday is usually the poorest market day. On account of local trade customs the jobber has a week longer to pay for a car purchased on Monday than if it had been bought on the preceding Saturday. Cars are sold on track in the various railroad yards.

There are 12 or 14 carload receivers, mostly brokers or representatives of large companies who operate in producing districts as well as in this market. Carload receivers usually sell to jobbers and chain stores in carload lots. Most stock is sold outright, with few consignments except on stock of very poor quality or at times when the market is badly overloaded. The jobbers sell to the retailer in 1 to 5 sack lots and to small jobbers and wholesale truck peddlers in 10 to 50 sack lots.

Most potatoes are received in irregular-weight sacks. Several attempts have been made to sell potatoes in bulk but with little success, as the trade is not equipped to handle them loose. It was found necessary to sack them before the jobber or retailer could be interested.

In past years several attempts were made to popularize a 50-pound burlap sack, but it was too large a package for the consumer and more expensive to use than the larger sack.

During a recent season an Idaho shipper introduced a 25-pound white muslin bag, attractively branded, which met with popular favor as a consumer package. Several shippers, car-lot receivers, jobbers, and retail chain stores are shipping or repacking potatoes in these 25-pound bags under their own brand. It has been estimated that 15 to 20 per cent of the potatoes used in the market reach the consumer in these small bags.

Many cars are sold for diversion to near-by cities, going as far as Bakersfield and Santa Barbara on the north, Phoenix, Ariz., on the east, and the Mexican border on the south. Scores of wholesale truck peddlers load at the market each night and supply retail stores within a radius of 100 miles of the city.

MISTAKES OF SHIPPERS AND RECEIVERS

Many of the losses to shippers result from poor grading and from careless handling and loading. Many complaints regarding late-crop potatoes come under some of the following heads: Undersize, mixed varieties, sizes or grades, scab, rot, cuts, and bruises. Troublesome defects are illustrated in Figure 16. Shippers as a rule lose heavily when a car must be discounted because of freezing injury or inferior quality. They lose not only the potatoes sorted out, but the amount chargeable to freight and the cost of labor in handling such stock.

A mixture of red and white varieties, or of two types of white stock, is a source of trouble at unloading points. For example, in Boston, shipments from Canada may contain a mixture of the Irish Cobbler

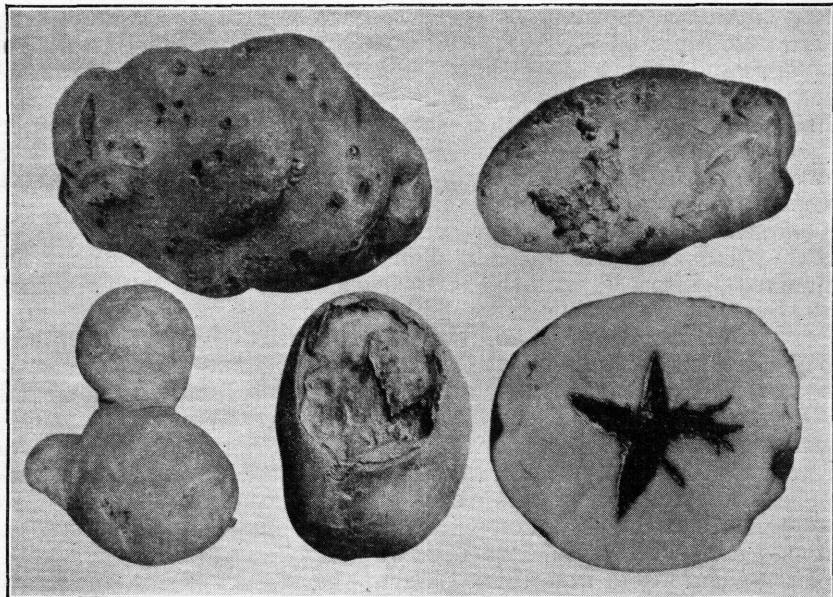


FIG. 16.—Common defects of late-crop potatoes. Upper row, left to right, wire-worm and scab injury; lower row, left to right, irregular second growth, late blight tuber rot, and hollow heart

and Green Mountain. Such conditions involve a discount in the price, and justify rejection of cars bought as one variety or type. Packed and loaded separately, either variety might command full price.

A study of freight rates may suggest profitable changes in market destinations. (Table 5.) Thus in cities in southern California the higher freight rate from shipping stations in the State of Washington confers an advantage on Idaho shipping points.

One class of mistakes, costly to large handlers, may be considered as poor salesmanship—not knowing the proper time to sell or holding for a price higher than the stock is worth. The largest losses are likely to be incurred by those who do not keep thoroughly informed concerning facts that affect the market. Careless methods of buying and inspecting stock, handling cheap, inferior grades and misrepresenting them, or holding them for the price of good stock—such ways have been the undoing of dealers in some markets.

A FEW CHIEF POINTS

The late crop of potatoes is shipped chiefly from the States near the northern border. In recent years between one-half and two-thirds of the potato crop has been sold; the rest is accounted for by waste, shrinkage, seed, starch requirements, and home use. A little more than one-third of the average late crop is shipped in carloads.

The practical question is when, where, and how to sell the commercial crop. Prices are closely related to production, which in turn depends on acreage and yield. Reports of heavy plantings in early sections suggest caution, especially if production was light the season before. A season of heavy planting often follows a season of light production and high prices. For this reason, it is unsafe to increase acreage heavily in the year following a season of high prices, especially if early reports show that farmers in general are increasing their plantings; but supply and price depend on yield as well as on acreage, and the yield of the main crop can not be forecast until August or September.

A yield in the 35 late-potato States much above 3.4 bushels per capita population of the United States has usually resulted in rather low prices. A yield much lighter than this has generally brought relatively higher prices.

The chief price-making factors are acreage, production, losses from rot, disease, or freezing, demand, and the competition with imported potatoes or with the early crop. There are also fluctuating prices caused by weather and conditions of transportation.

Crop and market news supplied by the United States Department of Agriculture includes crop and market reports and summaries published at field stations located in the prominent shipping sections and at permanent market stations, including the Washington office. These reports, mailed to applicants free of charge, contain the facts of production, shipment, prices, demand, essential quality, and condition. If the reports are persistently used and compared from day to day, and season after season, they become more and more useful in showing the potato holder when, how, and where to sell.

The general condition and course of the market is best indicated by sales of the leading grades of the most important commercial varieties in the largest and most active markets.

Among the regular price developments to be looked for in average seasons are a comparatively low price at digging time, with some gain as shipments decrease or when winter conditions begin; then several months of moderate ups and downs; and then another swing, upward or downward, with the opening of spring activity.

The quantity of stocks held by growers and local dealers on January 1 has often proved an indication of the course of the late winter and spring markets.

A study of the conditions and practices in important producing sections and in the leading markets may suggest to the grower how he can improve his own marketing methods.